

PURCHASING

AUGUST, 1951



W. HOWARD AHL, Guest editorial on page 69

A Day in the Life of a P.A. . . . Expediting Orders
Purchasing at Lockheed . . . This Business of Buying

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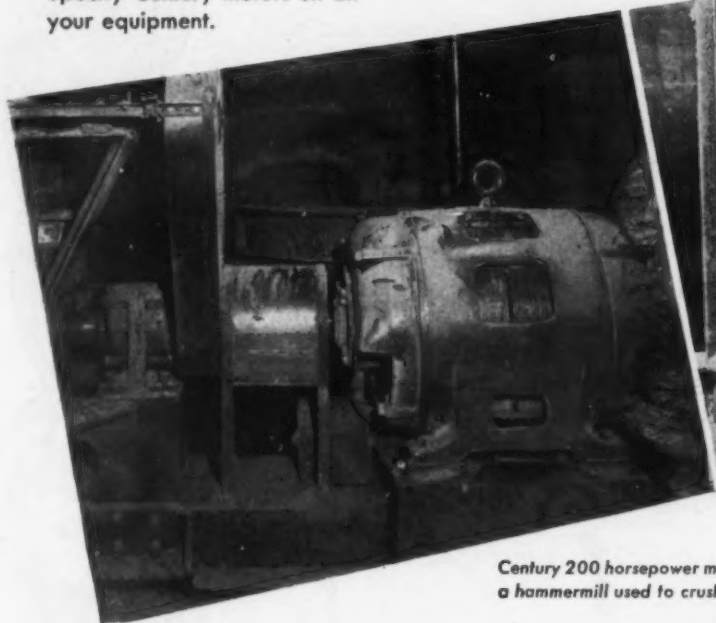
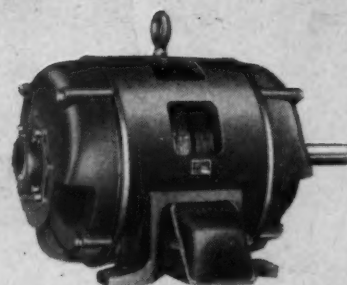
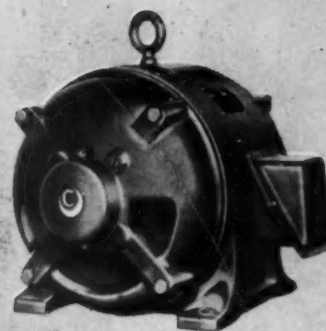
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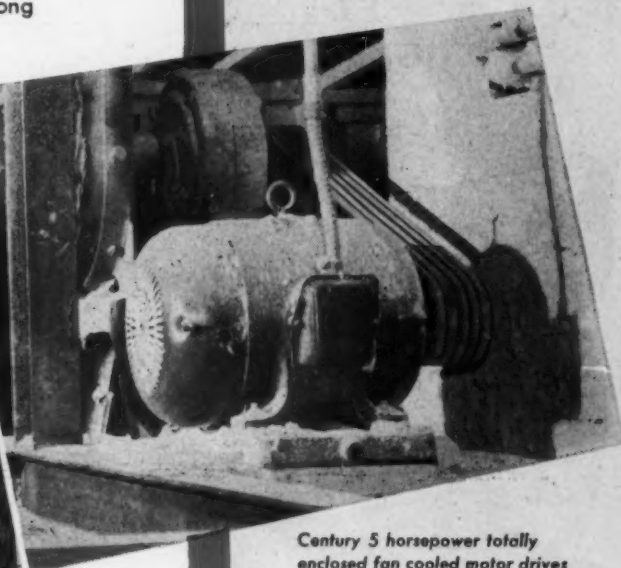
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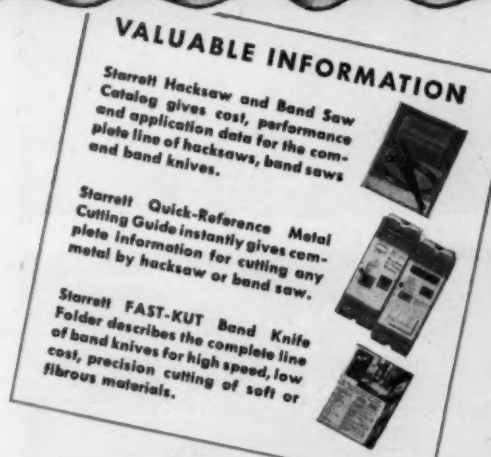
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The National Magazine of Industrial Procurement

VOL. 31, No. 2

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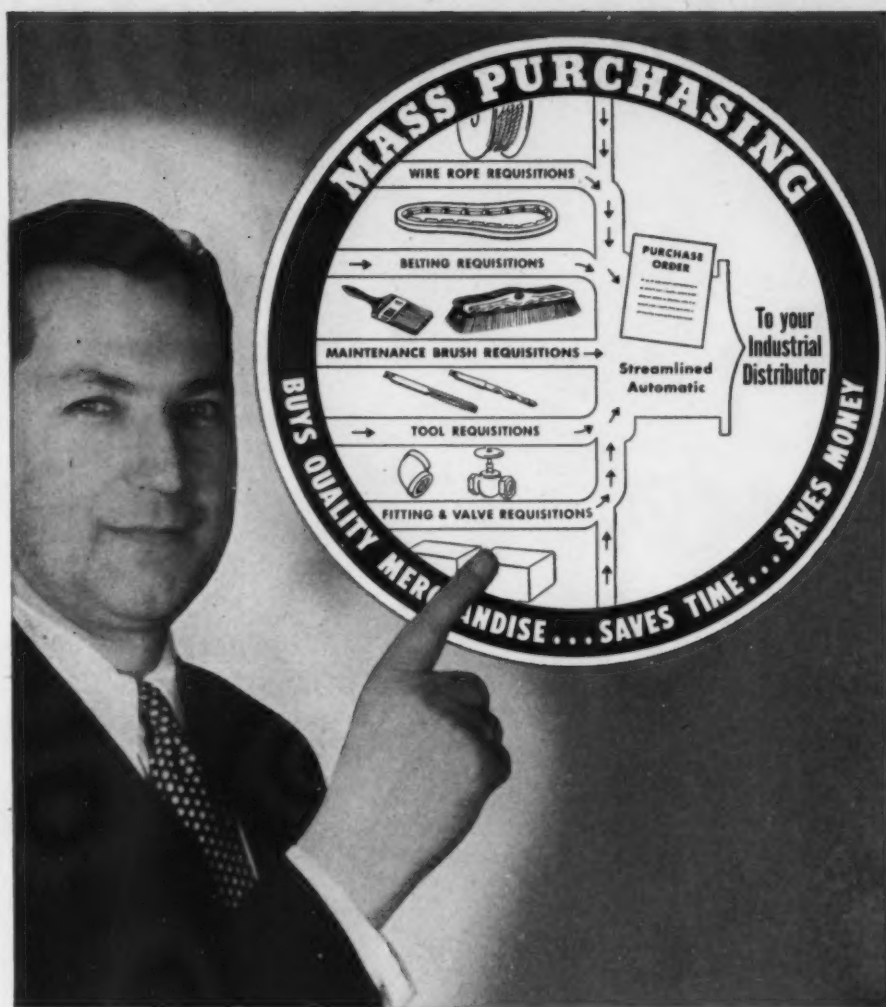
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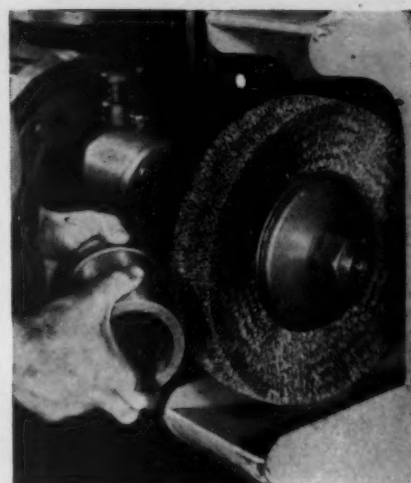
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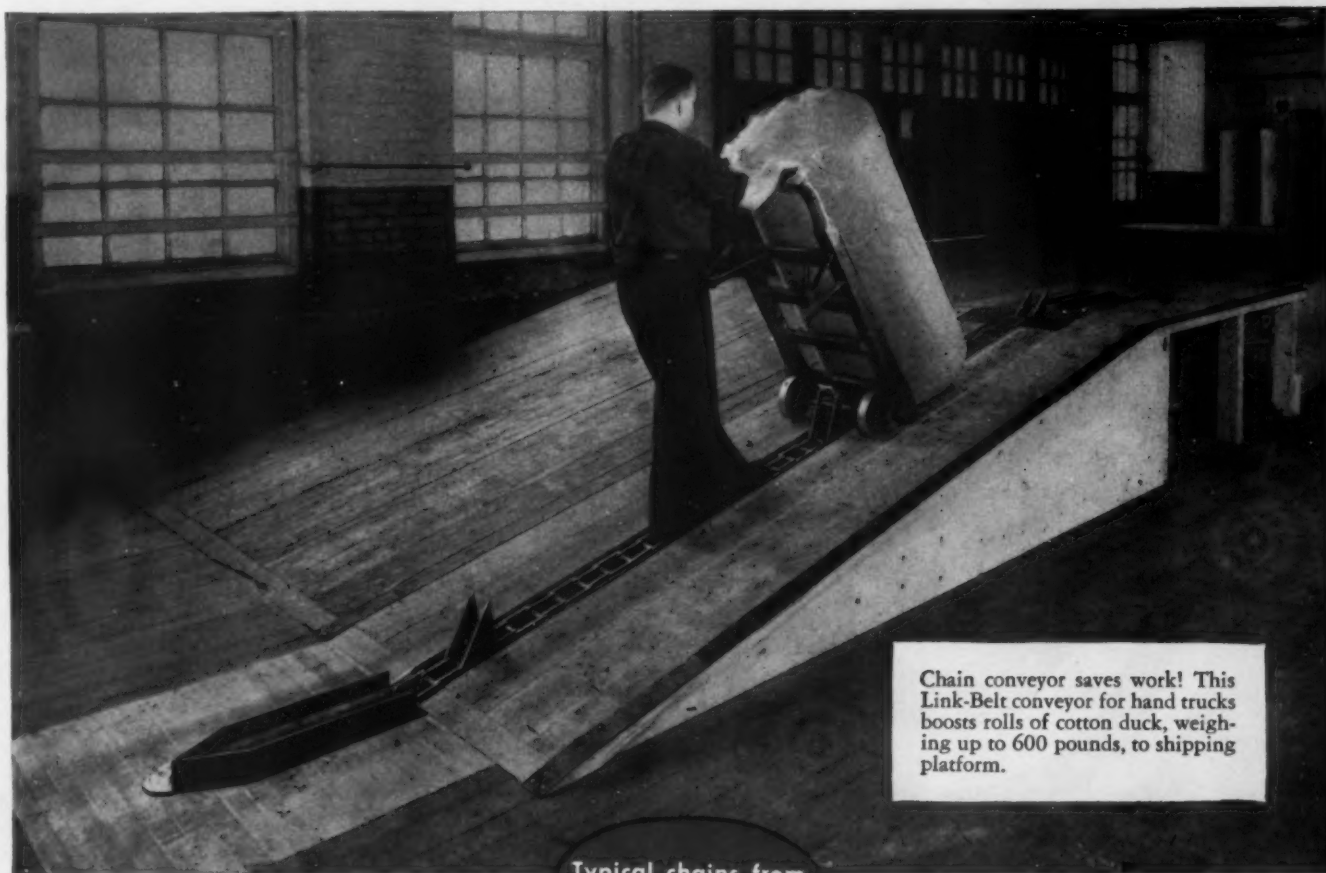
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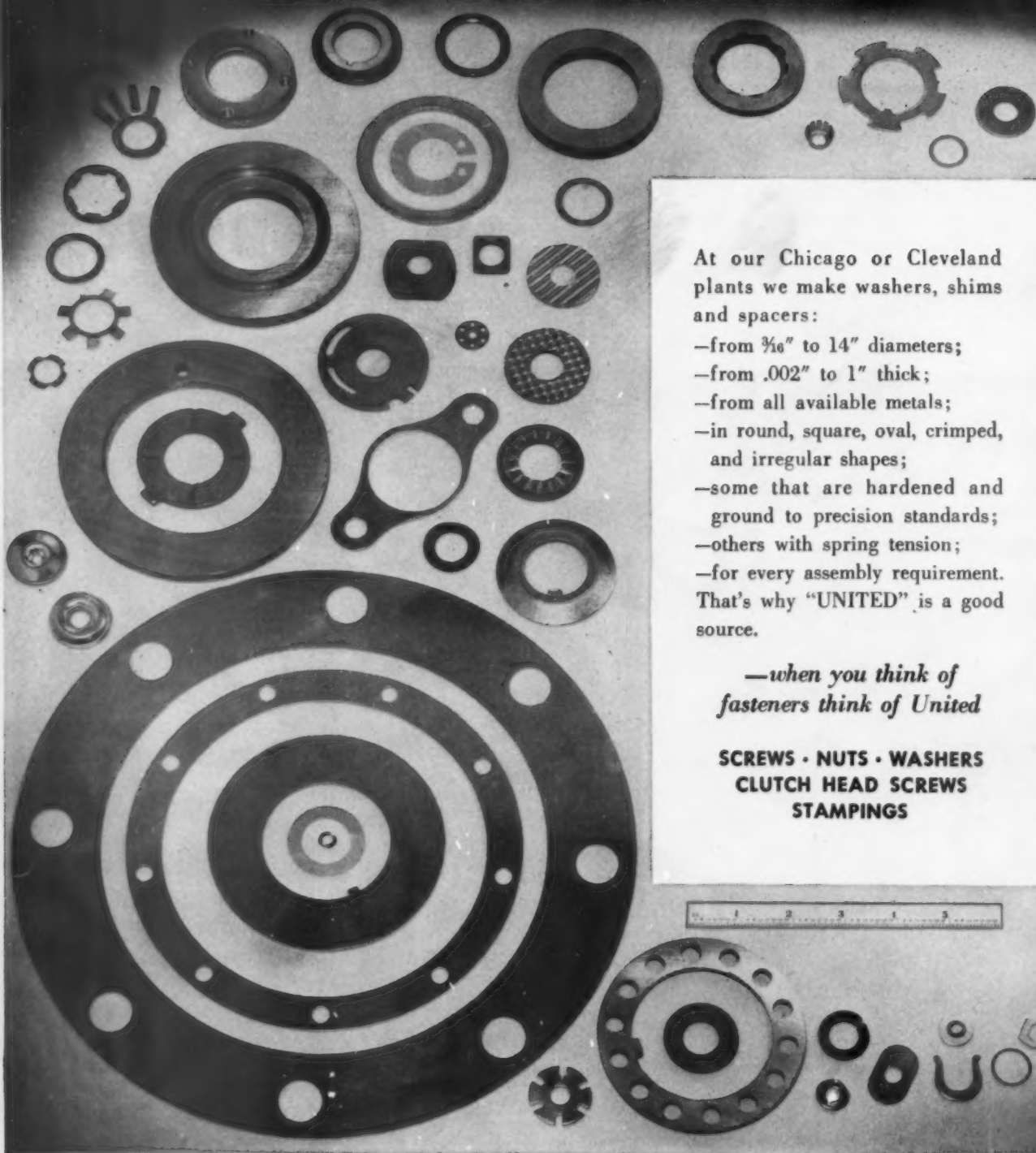


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PURCHASING PREVIEWS

A WASHINGTON REPORT FOR PURCHASING AGENTS

August 1, 1951.

DEFENSE PROCUREMENTS TO BE SPEEDED UP

While the defense mobilization program was not based on the war in Korea, the war was the spark that transformed what was originally slated to be a \$2 billion military program into a program calling for the expenditure of \$100 billion.

Already close to half of the \$100 billion sum has been committed through procurements, and the balance is to be spent during the fiscal year which began last month.

It is the firm intention of the Government to continue the mobilization without slackening. The suggestions that it may be possible to slow up—to spread the mobilization program over a longer period of time—are being brushed aside.

The target date for complete military preparedness is still 1953, and it is significant that the Office of Defense Mobilization reports that currently the deliveries of military goods are running at 80% of the scheduled goals. This means that the plans call for further pressure to speed up deliveries, and also for the letting of an additional flood of military procurements.

SHORTAGES AND CONTROLS TO CONTINUE

The Government program will lead to continued shortage of materials, and strong pressure on prices and wages. In short, the general approach of the various Government officials who are directing the mobilization program, is that Korea was and continues to be an incident which dramatized the need for mo-

bilization—but that the need for armed strength in this country exists regardless of what happens in any one area.

From a practical viewpoint, it appears that the mobilization program will continue as planned, with the Congress appropriating the large sums of money which have been requested by the Department of Defense.

It is likely that the Government control agencies will have to give more consideration to unemployment created by materials use restrictions, and generally to the problems of smaller manufacturers who cannot fit as readily into military production as some of the larger producers.

SHORTAGES OF CONSUMER GOODS ANTICIPATED

The general thinking is that while the Government will be able to continue its materials control program without substantial change, there will be great opposition to tight price controls, and to the severe program of taxation which has been advocated as a means of draining off any surplus consumer

spending power.

Throughout the remainder of this year, there will be some question as to the extent of the impact of the mobilization program.

The accumulated inventories of consumer goods continue to overhang the market, and consumer buying has been very cautious. It is believed that this condition will continue through the early fall, when a new consumer buying surge is expected.

The big question is whether consumer buying toward the end of this year will consume the large quantity of goods which have been accumulated as inventory at the manufacturer level and at the various levels of distribution.

It is the Government view that consumer purchases this fall and winter will take a very substantial portion of accumulated consumer goods inventories, and that there will be shortages in many lines.

FACTORS IN STEEL SHORTAGE

For the immediate future, the most pressing shortage will be in structural steel. The plant expansion program, superimposed on an expanded freight car production, petroleum industry expansion, larger shipbuilding and the military requirements, will create a great demand for heavy steel.

Problem of expanding steel production centers around the shortage of coke, scrap iron, pig iron and alloying metals.

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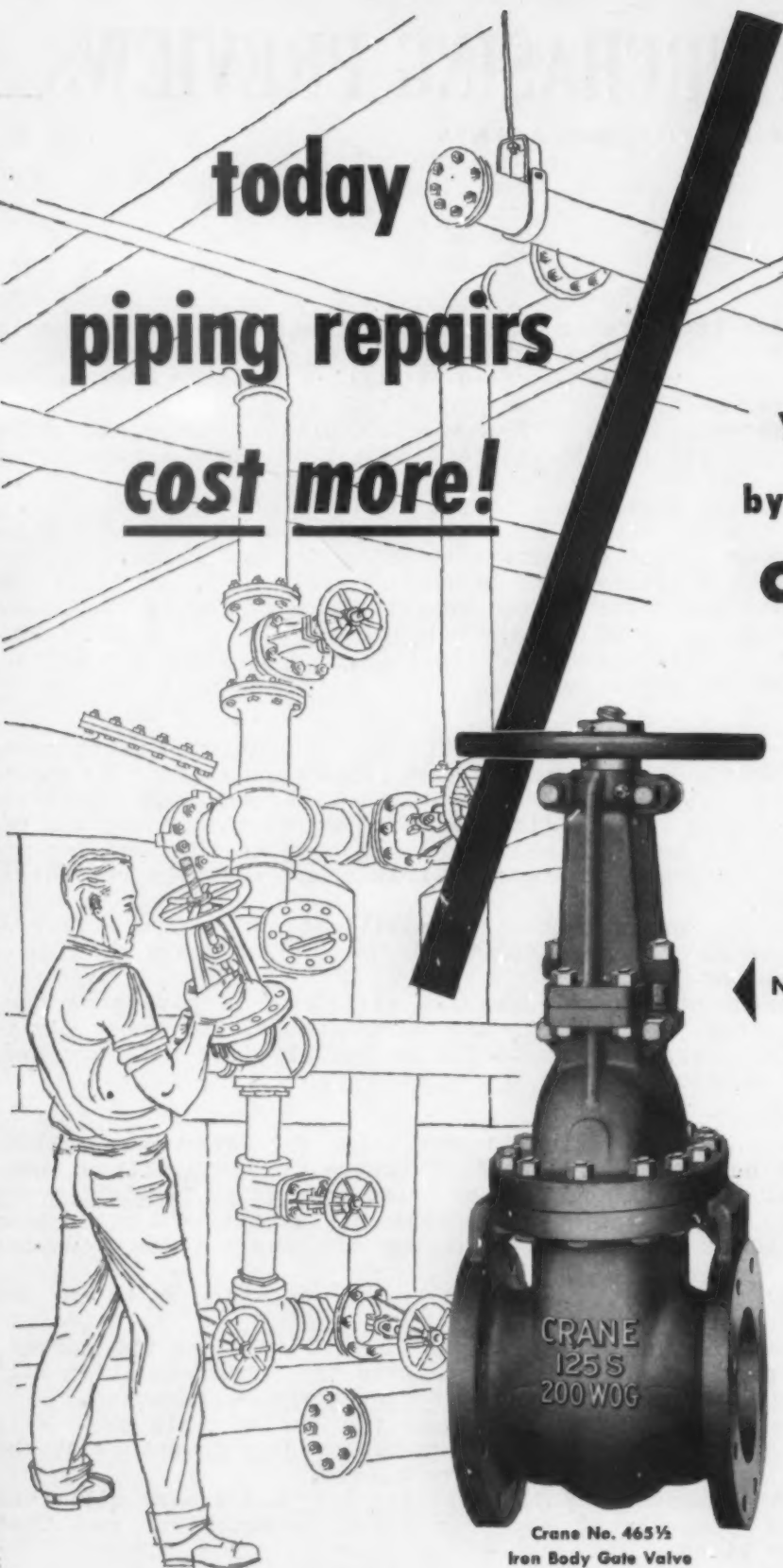
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▲PURCHASING PREVIEWS

continued

Coke supply is being expanded, and sufficient coke will probably be produced to meet requirements. There is likely to be a squeeze in pig iron, but this problem similarly will be met.

The problem of scrap iron supply is far more troublesome. The goal will be to supply 36,000,000 tons of iron and steel scrap this year. Five hundred scrap mobilization committees have been formed.

Alloying metals continue to be in short supply, and the control program in this field of materials will continue to be the most stringent of all.

ALLOCATION OF MATERIALS TO EUROPEAN ALLIES

The problem of maintaining the mobilization pace in this country when war excitement dies down on a specific battle-front, is even more acute in the case of some of our West European allies. Increasing consideration is likely to be given to steps for keeping Allied support at a maximum level.

Sore spot in the relationships with the Western Allied nations has been the distribution of available strategic materials.

International Materials Conference has been created to work out the problem of materials distribution. Seven committees have been created to work out methods of conserving and of increasing production of the following groups of materials: copper, lead and zinc; cotton and cotton linters; manganese, nickel and cobalt; molybdenum and tungsten; pulp and paper; sulphur; wool.

Varying solutions to the problems of world shortages in these materials are being studied.

To alleviate the shortage of sulphur, a plan has been developed for distribution of supplies and also for increasing production. Studies are being made in the field of alloying materials to eliminate waste and to find substitutes.

As for cotton, increased U. S. production is likely to supply the shortage needs. Development of synthetic wool production is under way to overcome the shortages of this fiber. A special program of rubber and tin allocation among the Western Allies is being developed.

NEW INFLATIONARY PRESSURES TO DEVELOP

Basic pressure on prices has been partially checked by a combination of price and credit controls and a decline in buying—the latter showing up in some fields where the consumer buying urge seems to have run out of steam, for the time being at least.

In the view of Government advocates of control, prices are likely to start moving up sharply again—mainly because national security expenditures will be increased from the current level of about \$35 billion a year to more than \$65 billion a year from now.

The additional spending will drive up incomes, without adding to the supply of civilian goods. Government control advocates forecast that the mobilization program will create an inflationary gap of from \$10 to \$20 billion.

CURRENT CONDITIONS CLOUD CONTROLS PICTURE

To hold the line on inflation, the Government program suggests that the level of prices and wages must be held in line, and that taxes must be increased to absorb such money as is in surplus.

While this Government outline might well be accurate for a period six months from now, the economy currently shows a large overhang of some types of consumer durable goods inventories, increasing unemployment due to conversion of industry from civilian to military production, and an increasing resistance to higher taxes.

Government position is that if recommendations for stringent price and wage controls are not adopted, prices of consumer goods will advance substantially and prices of military goods will go up considerably—and that the dangers of inflation will become clearly and pressingly apparent by early and mid-1952, with the need then for a control program aimed at stabilizing prices at a much higher level than would be possible now.

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Businessmen recognize inflation as the nation's greatest single threat. But most of us have felt "What can one man—even one business—do to stop it?" But there is a way—if enough of us work at it. We can

help more people . . . the men and women who work and vote and pay taxes . . . to understand the nature of inflation, its causes and cures. Then we will have gone a long way toward eliminating this pending catastrophe.

ONE TOOL YOU CAN USE: To help us give our own Bemis workers the inflation picture, we used the colorful, new 16-page booklet "How Stalin Hopes We Will Destroy America" produced by Pictorial Media, Inc. The more widely the booklet is used, the more good it will do . . . and it is available for distribution to your workers, too. It follows the time-proven "comic book" technique . . . dramatizes the dangers . . . and shows how all our citizens can help halt inflation before it's too late.

TESTS SHOW IT HELPS WORKERS: To get an impartial judgment of the value of "How Stalin Hopes We Will Destroy America," it was tested in Bemis plants by the Psychological Corporation under the direction of Dr. Henry C. Link, a foremost research authority.

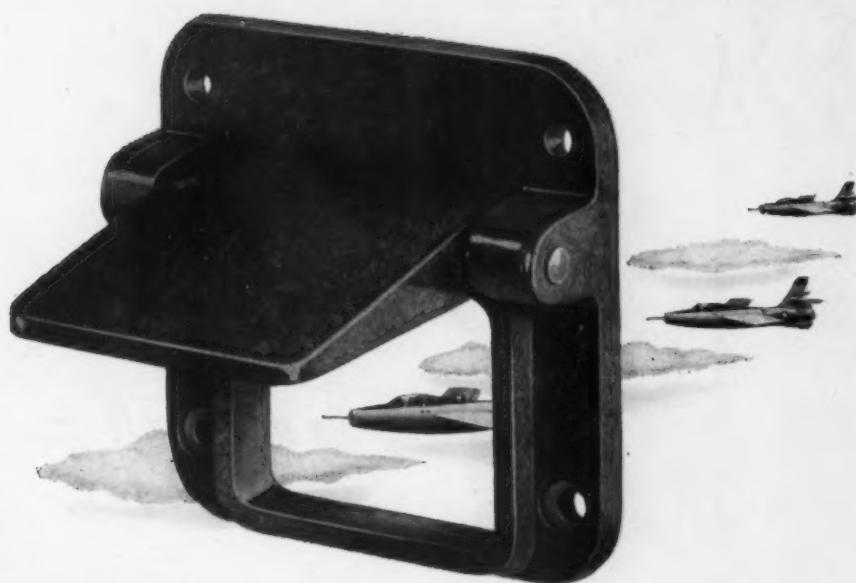
Dr. Link says "Those workers exposed to the booklet were found to have a significantly higher appreciation of the recommended ways to stop inflation than did the workers who did not see the booklet. Details of this test are available upon request." And Bemis factory workers make such statements as "Everything it says hit home, but you'd never figure it out for yourself

until you read it" . . . "It's told in an interesting way so anyone can understand. My daughter, age ten, understood all of it" . . . "In picture form it impresses you more. Most people don't read about it" . . . "Had ideas that we wouldn't think about otherwise while we are working away—good book, agree with it—I guess I won't be the only one."

Because we believe this message is growing more urgent every day, Bemis is taking this means to commend to other businesses this weapon against inflation. It is the first of a series of such material that we expect to use.

BEMIS BRO. BAG CO.
St. Louis 2, Missouri

FOR EVERY BUSINESS, LARGE OR SMALL: In quantities, it costs only a few cents a copy—\$10.00 for 100 copies, down to 3 cents per copy in larger quantities. Single copy free. For full information, write PICTORIAL MEDIA, INC., Attention: Paul Wheeler, 205 E. 42nd ST., NEW YORK 17, N.Y.



How to discipline fuel—in flight

It takes more than an experienced pilot and well engineered control surfaces to keep an airplane in straight and level flight.

Fuel must be delivered to the engine without fail. The fuel must be controlled—prevented from sloshing from one cell to another or from end to end of the cells.

That's where the little flapper valve, manufactured for the B. F. Goodrich Company, comes in. Placed in fuel cell baffles, and opening inboard, these devices keep the fuel in place despite any changes in flight attitude, permit the fuel to flow only in the proper direction.

They must be positive in operation. The material from which they are made must be inert in the presence of "loaded" aviation fuels, dimensionally stable, non-absorptive, light in weight . . . and, for reasons of economy, be easy to manufacture.

All these requirements add up to a call for Synthane molded-macerated plastics. But there is much more to the story. Synthane has a wide and rare *combination* of chemical, mechanical and electrical characteristics which make it a material for almost all industry.

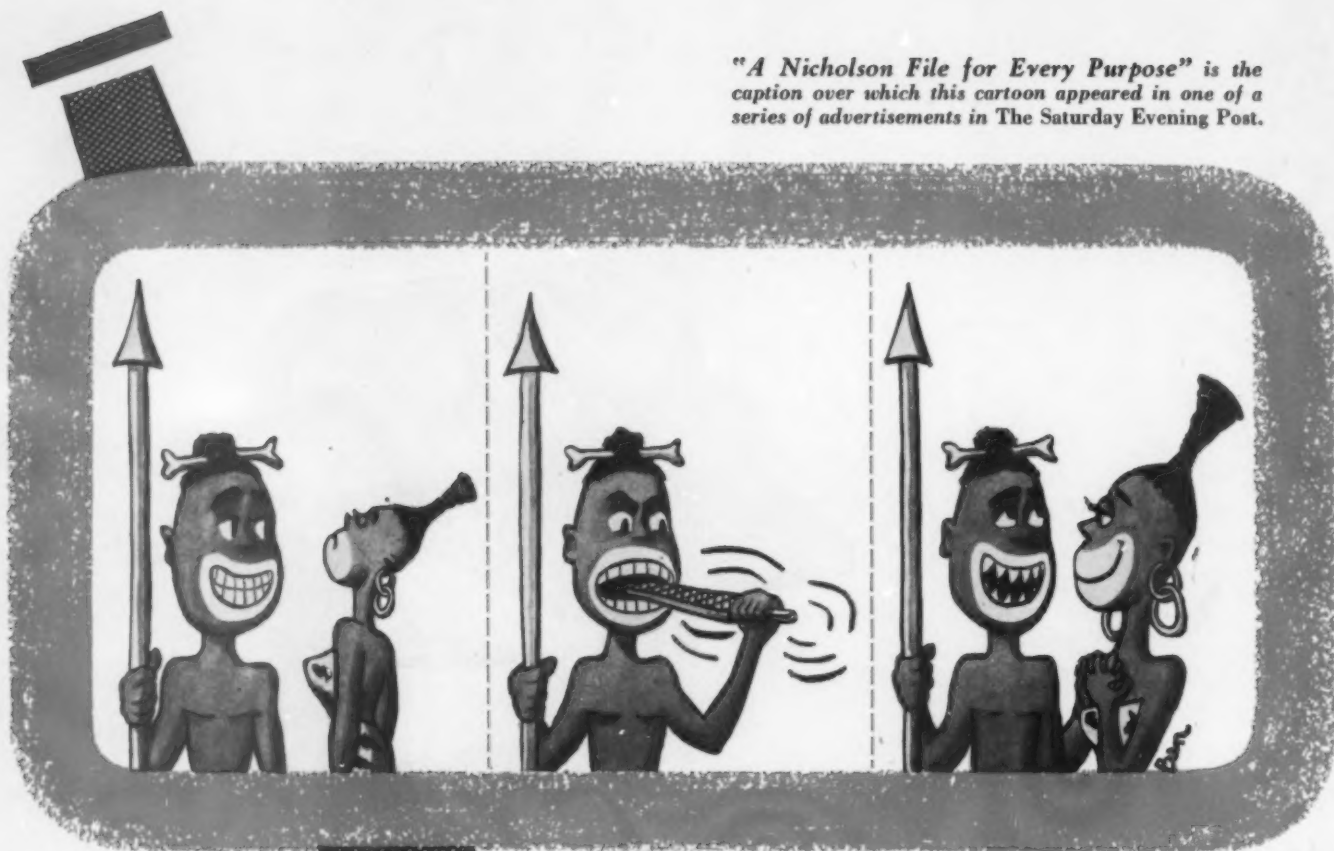
It is hard, dense, exceptionally strong for its weight. Synthane is an excellent electrical insulator, has low dielectric constant and low power factor. It is economically produced in molded forms of moderately complex shapes. Parts may be quickly machined from Synthane sheets, rods or tubes on standard equipment. It is moisture and corrosion resistant, and is *thermo-setting*.

These few of Synthane's many advantages may suggest its value to you. If you would know more about Synthane, send for the Synthane Catalog. Synthane Corporation, 7 River Road, Oaks, Pennsylvania.

PLASTICS WHERE PLASTICS BELONG

SYNTHANE
Oaks  Pennsylvania

"A Nicholson File for Every Purpose" is the caption over which this cartoon appeared in one of a series of advertisements in The Saturday Evening Post.



Enlarged "horizon" (cross section) of the teeth of a typical Nicholson file.



How to select, use and care for *The right file for the job* is interestingly described with words and pictures in Nicholson's famous 48-page book, "FILE PHILOSOPHY." FREE . . . send for as many copies as you can judiciously place in the hands of your key production and purchasing personnel.

The right teeth make a big difference

Proper design, even height, uniform sharpness and correct hardening of teeth are tremendously important in lengthening the life and increasing the efficiency of files. Such qualities take on added significance as defense preparedness calls for production speed-ups, steel conservations and maximum tool wear. They are "naturals" in Nicholson products.

Nicholson file manufacture has *always* given uppermost thought to the designing, cutting and heat-treating of the myriads of tiny teeth which constitute the vital "business ends" of one of industry's most indispensable hand tools.

Thus, it can be said that Nicholson and Black Diamond files "speak through their teeth." And what they say is, "Twelve perfect files in every dozen—made from top-quality file steel and 87 years' experience."

Sold through industrial distributors throughout the world.

NICHOLSON

A FILE FOR EVERY PURPOSE



NICHOLSON FILE CO. • 28 ACORN STREET • PROVIDENCE 1, RHODE ISLAND
(In Canada, Port Hope, Ont.)



Modernize

YOUR CATALOG AND BULLETIN FILES

Bring Your Source Information Up-to-date on New and Improved Equipment, Products and Materials. This is the first of — FIVE Pages Listing the Latest Trade Literature! Check All Five — 19, 20, 22, 24 and 176! A special listing of catalogs and bulletins on office equipment and supplies will be found on page 176. Additional information about New Products described on pages 128 to 174, use the coupon on page 128.

Wooden Work Benches, Sorting Tables, Cabinets, etc.

1. MAIL and package sorting tables, work benches, storage cabinets, key cabinets, bulletin boards and other items constructed of kiln-dried hardwoods are described in new folder "Corbin Wood Products." Products illustrated and described are offered for shipment knocked-down, complete with all hardware needed for assembly. Corbin Cabinet Lock, Wood Products Divn., American Hardware Corp.

Cold Forged Locknuts

2. TWO types of Townsend locknuts and their advantages are described in a new 4-page illustrated folder. The Nylok locknut has a tough nylon plug insert in one of the hex faces on the nut midway between top and bottom as its locking element. The Tufflok nut contains a treated hexagonal fibre washer as the locking medium. Both nuts are cold forged. Complete description and specifications of these locknuts are listed according to sizes and finishes in tables. Special advantages for aircraft and industrial usage are discussed. Townsend Co.

Water Treatment and Water Conditioning

3. WATER treatment and water conditioning are the subject of 16-page booklet No. 501. The booklet gives considerable technical data and describes Brooks Services, products and methods employed in solving the many water problems en-

countered in industries, institutions and governmental work. Water treatment service is divided into seven categories: Boiler Water Treatments, Water Line Treatments, Cooling Water System Treatments, Brine System Treatments, Waste Water Treatments, Zeolite Softener Treatments, and Consulting Service. Brooks Chemicals, Inc.

Hard Chrome Plating Unit

4. BULLETIN IC 20 tells about the Model A-20 Chromaster industrial hard chrome plating unit which features built-in power supply, low power consumption, and easy operation. The bulletin describes Chromasol plate for higher production at lower cost. The Chromasol solution is an economical non-critical chromium solution made especially for the Chromaster plating unit. It will plate directly on industrial steels, cast irons, and most non-ferrous metals. The solution requires no

heating or expensive heat regulating controls. The "throwing power" of the solution is described as being excellent. It follows the exact contours of work surfaces without build-up on sharp corners or inverted angles. Ward Leonard Electric Co.

Protective Equipment for Welders

5. CIRCULAR describes and illustrates a wide range of eye protective devices for both gas and arc welding, and includes product information on respiratory protection for welders. Accessories such as rubber mask padding for goggles and the Weld-Aid lens for welders who wear bifocal glasses are also described. A full page is devoted to various types of filter glass and includes a selector chart of types and shades for different welding operations. Willson Products, Inc.

(Continued on page 20)

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AUGUST, 1951

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(Continued from page 19)

TEFC Motor Bulletin

6. BULLETIN describes types of construction and ratings of totally enclosed, fan-cooled motors with tube-type, air-to-air heat exchangers. The design has proved itself in service under severe conditions at numerous central station auxiliary, oil field and refinery, and general industrial installations, both indoors and outdoors. Chart shows ratings of motors available in squirrel-cage, wound-rotor and synchronous types for both horizontal and vertical installation. With mechanical modifications motors can be made explosion proof suitable for Class I, Group D Service. Check No. 30 for copy of Bulletin 05B7150A. Allis-Chalmers Manufacturing Co.

Non-Electric Magnetic Separators for Tramp Iron Removal

7. NEW 16-page catalog on No. 15 "Non-Electric Permanent Magnetic Separators for Tramp Iron Removal", gives complete description of separators, pertinent engineering data including photographs, drawings, and tabular specifications. Information on the selection of the appropriate magnetic separator, engineering service available, as well as full explanation of the life of permanent magnets are dealt with. Eriez Manufacturing Co.

Operating Principles Behind Chain Drives

8. COMPLETE catalog tells about the new, revolutionary Hy-Vo power transmission drives. The catalog, No. C-72-51, includes: A basic discussion of the operating principles behind chain drives; highlights of the new design principles incorporated in the Hy-Vo drives; description of what the drive will do in the field of high-speed, heavy duty power transmission; and capacities, speed ranges and service factors for selecting drives. It also contains installation and lubrication procedures. Morse Chain Co.

Hand Lift Trucks

9. BULLETIN 5141, 24 pages, illustrates and describes in detail lift trucks in capacities of 1000 to 15,000

LATEST TRADE LITERATURE

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lbs. with design drawings and specifications. New Barrett hydraulic lift trucks, Models ED, LD and HD are presented for the first time—these have been developed for the easier one-man handling of heavy loads. "Selecting the Proper Model" is the title of a chapter which is of definite and practical help to lift truck users. Barrett-Cravens Co.

Hydro-Sand Blast and Core Knockout

10. BULLETIN 1110, 12 pages, tells about Hydro-Sand Blast and Core Knockout, and illustrates and describes how Hydro-Sand blast (a powerful stream of mixed sand and water) is applied to economically solve the core knockout and casting cleaning problems in foundries; details the application of a special machine for cleaning heat exchanger tubes in the petroleum field; and gives specifications and drawings of two standard machines. A two-page report tells how a large refinery saves \$120,000 per year by cleaning deposits of carbon, tar, oily matter, etc. from bundles of heat exchanger tubes. The Pangborn Corp.

Self-Aligning Roller Bearings

11. USERS of industrial roller bearings and mounted units will be interested in new Shafer Catalog No. 51, which illustrates and describes the full line of Shafer products including pillow blocks, flange units, flange cartridge units, cartridge units, duplex units, take-up units, take-up and frame units, plus unmounted roller bearings. Advantages of the bearing ConCaVex design, including integral self alignment, high shock load capacity and extra-low friction are covered in the catalog. Many new and larger models of mounted bearing units with standard shaft sizes are now available up to 5-inch diameter. Shafer Bearing Corp.

Heat Treating Furnaces For the Aircraft Industry

12. ILLUSTRATED bulletin presents heat treating furnaces for the aircraft industry. Equipment for batch and continuous heat treatment of ferrous and non-ferrous parts for power plant, air frame and armament are described and illustrations of basic types included. Bulletin SC-152 is divided into sections which are devoted to the basic aircraft components: steel tubing and assemblies, aluminum and light metal assemblies, jet and reciprocating engine parts, propeller blades and miscellaneous aluminum forgings. Surface Combustion Corp.

Meter Selection Guide for 200 Liquids

13. NEW bulletin OG400 is designed as guide to the proper selection of meters for measuring more than 200 liquids with varying corrosive characteristics. Included is data on liquids running from absorption oil to zinc chloride, and liquids used in food, beverage, paint, chemical process, petroleum by-product, refrigeration and other industries. Industrial meters covered by the bulletin are built with cases and parts of a variety of metals and other materials, assembled according to service conditions. They range in size from 1/2" to 3"; measure in gallons, Imperial gallons, barrels or liters; have totalizer capacity of up to seven figures, and are available in six types of registers. Rockwell Manufacturing Co.

Makes Paint Stick to Galvanized or Cadmium Surfaces

14. LITHOFORM is a non-flammable, liquid zinc phosphate coating chemical that is applied before painting to galvanized iron, galvanneal, cadmium plated steel, zinc plated steel and zinc base die castings. It may be applied by brushing, immersion, or spraying. It produces a dense, stone-like coating that forms a firm and lasting bond with paint. Peeling of all types of paint, lacquer and enamel is practically prevented. Technical Service Data Sheet 7-2-5 gives complete information. American Chemical Paint Co.

(Please turn to page 22)

**A MESSAGE
TO AMERICAN
INDUSTRY**

**"This is more than a shortage
... this is an emergency.**

Every pound of your scrap is needed, NOW!"



"THE STEEL INDUSTRY is currently operating at more than 100% of rated capacity—turning out well over 2 million tons of steel per week. This record high production—every ton of which is in urgent demand—cannot be kept up unless we get more scrap from every potential source. For without your scrap we cannot produce enough steel. Today, every ton of steel turned out requires a half a ton of scrap for its production. That's why scrap—more scrap—is so urgently needed, and needed right away.

"The fact we have to face today is that steel mills are operating on a hand-to-mouth basis as far as scrap is concerned. Some mills are working on only a two-day supply of scrap. We already have had to shut down steel-making furnaces for lack of scrap.

"That's why we are asking you to strain every effort to get more scrap out of your plants and yards and on its way to the mills . . . to search out the scrap that doesn't come to market in normal times. You'll find this "dormant" scrap in obsolete equipment, tools and machinery that you haven't used for years . . . overlooked in your storage sheds . . . or rusting away in a junk pile in some forgotten corner. It's there. Turn it in at once—so we can turn out the steel you need. We can't do it without your help."

B. F. Taylor

President, United States Steel Corporation



UNITED STATES STEEL

(Continued from page 20)

Packing Provides Positive Sealing at High Pressure

15. "VERSI - PAK" non-jacketed plastic packing, which the manufacturer claims is a dense, relatively inert packing with high compressibility that provides positive sealing at high pressures while maintaining relative low pressure on the packing gland, is described in bulletin on R/M Plastic Packings. Made in two types, Versi-Pak is available black with graphite for general use, and in white non-graphited form for use in food handling equipment and other special services. It is claimed to perform satisfactorily against a large number of fluids, eliminating the necessity for stocking many special packings. Packing Divn., Raybestos-Manhattan, Inc.

Parts and Assemblies Produced by Centrifugal Casting

16. NEW bulletins show and describe broad range of component machine parts and assemblies produced by centrifugal casting method. No. 150 covers parts of non-ferrous metals including all bronzes, monel metal, nickel, aluminum and special alloys. No. 151 features parts of Meehanite metal, Ni-Resist and special iron alloys. Shenango-Penn Mold Co.

Handbook on Flat-Top Conveyor Chain

17. NEW bulletin No. 51-60 on Rex Table Top Chain is characterized as a handbook on flat-top conveyor

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chain. Besides showing and describing details of construction, new, unusual, yet practical applications of TableTop are shown. Section of book is devoted to Rex Flextop Conveyor Chain, Baldwin-Rex PlateTop Conveyor Chain and Rex Double Flex Chain. Rex Flextop is the newest conveyor chain manufactured by the company. Chain Belt Co.

Corrosion Notebook Gives Technical Data

18. SIXTEEN-page "Corrosion Notebook" contains data on the corrosion resistance of various types of stainless tubing and pipe. In addition to providing data by type of corrodent at various concentrations, the notebook describes general types of corrosion. Intergranular, galvanic, atmospheric and pitting-type corrosive conditions are described. Carpenter Steel Co.

Flexible Hose Lines, Fittings and Tools

19. FLEXIBLE hose lines, accessories, adapters, couplings and assembly instructions for various types of hose lines for industrial and aircraft applications are covered in new Industrial Catalog. In addition to giving complete information about these products, the catalog contains

information on how to order parts, and the construction and principles of hose lines and detachable, reusable fittings. Aeroquip Corp.

New Machine Tools and Production-Line Flame Hardening Machine

20. ONE of the highly specialized machines described in Catalog M1712 just released by The Cincinnati Milling Machine Co. is the Flamatic electronically controlled flame hardening machine for production lines. It is entirely automatic, produces uniform hardening with minimum distortion of part with subsequent savings in finishing, scrap, etc. Other machines described in detail include milling, broaching, cutter sharpening, grinding and lapping machines.

Air Operated Tacker Makes for Timesaving and Greater Production

21. FAST, efficient tacking with maximum ease of operation is claimed for Duo-Fast air-driven tackers in new bulletin which illustrates various uses of the tackers. Machine is lightweight and flexible, and operated with one hand leaving other hand free to hold material in place. It tacks as fast as the trigger is motivated, 30 staples in 10 seconds being the average speed. Air pressure required for regular models is 85 to 110 pounds, special models being available for low pressure—60 lbs. Special jaws are available for tacking around rounded material, recessed areas etc. Fastener Corporation.

Centrifugal Pump Guide

22. ECONOMICAL pumping units for every industry are cataloged in a new 16-page "Handy Guide to Selection of Centrifugal Pumps", which lists close-coupled, pedestal, double suction single stage, multi-stage, self priming, fractional horsepower, coolant and circulating, fire, process, solids handling, marine, rubber-lined, paper pulp, sewage, axial and mixed flow pumps. Head capacity charts and tables for various types of the pumps are given along with data on sizes, capacities and construction features. Copy of

(Please turn to page 24)

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ARE YOU ON A MAINTENANCE MERRY-GO-ROUND?

Every year, the United States spends the fantastic sum of *over eight billion dollars* just on maintenance of its industrial plant—sad proof that too many companies are on a “maintenance merry-go-round”!

Needless to say, this huge expenditure cuts deeply into profits . . . makes it imperative for you to examine *your* maintenance costs—find ways to keep them as low as possible.

One proved way to do this is to see that all your machines get *Correct Lubrication*. This means far more than just “oils and greases.” It means an analysis of your plant, recommendations of the right lubricants, guidance on when and how to use them.

Socony-Vacuum, with 85 years of experience, provides this combination of knowledge and product in one completely integrated lubrication program, tailored for your individual plant.

Why not start such a program now . . . and start cutting *your* maintenance costs?



SOCONY-VACUUM

Correct Lubrication

**WORLD'S GREATEST LUBRICATION KNOWLEDGE
AND ENGINEERING SERVICE**

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates:
MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION

(Continued from page 22)

this bulletin, 52B6059G is yours for the asking. Allis-Chalmers Manufacturing Co.

Leather Belting Manual Enables Selection without Calculation

23. UNI-Pull Drive Manual enables the reader to select without calculation, proper size of flat leather belt, i.e., width, thickness and length, together with the pulleys of the correct dimension, both driver and driven. Tables are also included from which a belt tension controlling motor base of any manufacture can be selected for all motors built in standard NEMA frames. Book also contains basic hp rating data for flat leather belting, recommended minimum pulley diameters, motor frame mounting dimensions and other drive information. American Leather Belting Association.

Catalog Covers Boots Self-Locking Nuts

24. THE entire Boots line of self-locking nuts—hexagon nuts, anchor nuts, floating anchor and channel assemblies is illustrated in new catalog. Complete data is given on sizes, dimensions, materials, heat ranges, types of anchor bases and so on. Boots Aircraft Nut Corporation.

Booklet Lists Unique Characteristics of Bakelite Polyethylene

25. BOOKLET "Bakelite Polyethylene" lists some of the unique characteristics of polyethylene plastic resins. The material is chemically in-

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ert, non-toxic, odorless and tasteless. Resistant to corrosive chemicals and solvents, it has an extremely low rate of water absorption and remains flexible at very low temperatures. It can be molded, extruded, or used as coating on paper, cloth or metals. Bakelite Division, Union Carbide & Carbon Corp.

Current, Potential & Metering Transformers

26. PACKED with technical information in the form of detailed drawings, accuracy limits, ratio and phase angle curves, Bulletin S-501-B is aid to persons working with instrument transformers. It covers the Standard Transformer Company's line of Current, Potential and Metering Transformers.

Shows How to Eliminate Waste of Hand Oiling

27. SUGGESTIONS on how to eliminate the waste and dangers of "trust to luck" hand oiling—how to increase production—reduce maintenance costs and lengthen machine life, feature four-page broadside "Series 4800". It was designed to show how to select the proper visible, automatic oiler for constant level, gravity, wick, underfeed, multiple and large capacity gravity feed

applications. Photos show installations. The broadside is 17" x 22" and may be used as a wall chart. Trico Fuse Mfg. Co.

Adhesives for Industry

28. NEW jobs for adhesives are being developed almost every day. New manual "Armstrong Adhesives for Industry" supplies valuable criteria for evaluating adhesives, as well as basic information about Armstrong adhesives. Subject matter includes: "What is the Right Adhesive for any job?", "How to Choose the Right Adhesive for each Job", and "Testing and Evaluating Adhesives." There is also a chart showing physical properties of adhesives by basic types. The book is designed to help adhesive users to buy and use industrial adhesives to the best advantage. Armstrong Cork Co.

Action Photos Show Use of Air Tools for Plant Savings

29. ACTION pictures shown in new catalog No. 38 are termed "a record of savings" where Rotor Air Tools are being used. The Rotor line includes screw drivers, nut setters, sanders, drills, grinders, rammers, chippers and scalers. Good illustrations present the various tools, and also show them in action. You will find this catalog of air tools for the foundry, steel mill, production line and assembly plant of much interest. The Rotor Tool Co.

New Vertical Sump Pumps

30. NEW line of vertical sump pumps in range of sizes from 1 to 10 inch discharge with capacities from 10 to 3000 gpm, and heads up to 140 ft., are subject of Bulletin 4600A. Pumps are regularly equipped with standard fluid ends but can be furnished with fluid ends for handling sewage in the 2", 3" and 4" discharge sizes. They are furnished with electric motors from 1/2 to 75 hp, or for steam turbine drive. Motor mounting is designed for standard NEMA type "C" flange, but pumps can be furnished with adapter flange for other types of motor mounting. Copy of the bulletin is available from The Deming Co.

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Who's topmost in a top P.A.'s mind?

A TOP purchasing agent has four people in mind when he buys component parts. One of them is himself—conscious of price, as a buyer, but not solely influenced by it. But what's more important, he thinks of what every purchase means to three other key men in his company—the salesman, the engineer and the advertising manager.

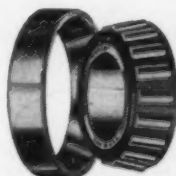
Keeping the salesman in mind, he selects parts that do most toward adding extra quality and saleability to the finished product. He gives his company's engineers a big assist by buying parts from a company that offers the most complete engineering service. And he's thinking about the advertising manager when he selects component parts that enjoy wide public acceptance.

Only by keeping quality, service and public acceptance in the picture—as well as price—does a top P. A. determine the value of parts he buys. As a simple guide to value, you may find this formula helpful:

$$\text{Value} = \frac{\text{quality} + \text{service} + \text{public acceptance}}{\text{price}}$$

Timken® bearings give you the finest quality, an unmatched engineering service and the widest public acceptance. And since these factors far outweigh price in importance, your best buy in tapered roller bearings are those that bear the trade-mark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

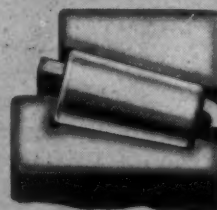
TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



P. A. Notes

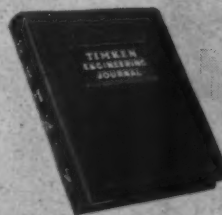
UNEQUALLED WEAR RESISTANCE!

Because Timken bearings have a tough core and a hard, carburized surface, they give longer life, freedom from wear and metal fatigue.



GUIDE FOR BEARING BUYERS!

You'll find 26 bearing types and 5850 sizes shown in the Timken Company's new engineering journal—only one of its kind. Your engineering department will find it invaluable in selecting the right bearing for any job.

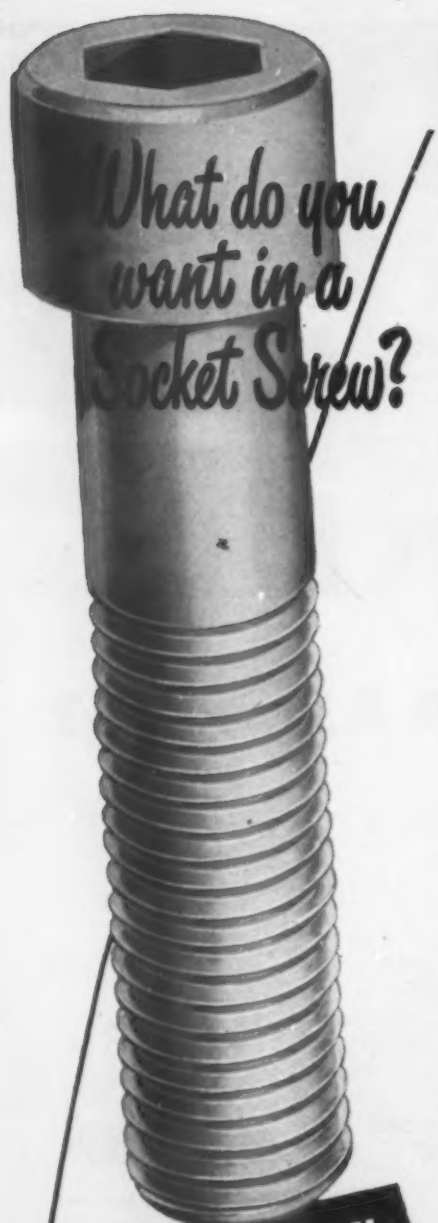


SHORT STORY—BUY A BIG ONE!

This label on more than 1000 manufacturer's products tells the world there's value inside. And throughout industry, Timken bearings are first choice!



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION



B-RIGHT-ON
has it!

- Special Alloy Steel
- Fine Compact Grain
- Accurate Forming
- Uniform Quality
- Great Strength
- Right Temper
- Smooth Finish
- Close Tolerances

You'll find all the features
you're looking for in Brighton
Socket Screw Products.

Get the facts on Brighton Nu-
Process and Uni-Quality! See your
nearest mill supply house or write
for detailed catalog.

BRIGHTON
SCREW & MANUFACTURING CO.
18-29 Reading Road, Cincinnati 2, O.

F.O.B.



FILOSOFY OF BUYING

COLUMNIST Erich Brandeis, in his syndicated feature "Brandeis Looks at Life", takes the view that the current public indignation about corruption in government is not well taken since "the oath of office does not change the fact that the oathtakers remain human beings with all the foibles and weaknesses of the human being." He goes on to support this thesis that graft is commonplace, and therefore presumably excusable, in the following paragraph:

"As to bribery and graft—there is not a day that many supposedly very honest and respectable purchasing agents are not bribed and accepting graft. I could write pages and pages of such incidents that happened of my own knowledge. I could tell you about purchasing agents that need a truck every Christmas to take home the 'presents' they get from suppliers. I could tell you about buyers from big stores who get their clothes for nothing and are entertained royally—as long as they keep on buying."

Life, as Mr. Brandeis looks at it, is a pretty sordid affair, and likely to become more so if we condone corruption on the highly questionable thesis that "everybody's doing it." But from a rather wide and representative acquaintance in the purchasing field, we are convinced that his premise is false. His low view of business morality, and the damning generalizations he expresses, would seem to be evidence that he has simply been consorting with the wrong individuals. One can be a realist without living in the muck.

There is one bright spot in the otherwise disheartening picture he paints—he himself, in person, once turned down the offer of a "juicy discount" on a TV set that was conditioned on giving a dealer free publicity in his column. "He was

surprised. I do not really know why I refused," Mr. Brandeis confesses. "Maybe the discount was not big enough. Maybe I am a sucker. But I was tempted."

We would suggest one further experiment that might help to restore his faith in human nature. Let him offer a bribe to a truly representative purchasing agent, then see if he can beat the buyer to the office door.

SPECIFICATIONS recently issued by State P.A. McWhirter of New Mexico called for three gentlemen of diverse proportions—one tall and thin, one plump, and one of average size—to serve as a testing panel when bids were opened on seats for the auditorium of the new Capitol office building. It was Mr. McWhirter's contention that this particular purchase required a deviation from the usual procedure of simply opening and tabulating bids in his small office with the assistance of a single clerk. Bidders will be permitted to have a representative on hand "to present, illustrate, and demonstrate their products," he said, but stipulated that such demonstrations should be supplemented by the more comprehensive test afforded by a testing panel as above specified. It was suggested that his own spare, angular frame could well qualify him as one of the judges, but the P.A. bowed out gracefully. "I shall serve as moderator," he said.

HOW LONG does it take to deliver a five-minute speech? A statistically minded member of the Rochester P. A. Association made

use of the stop-watch time-study technique to find the answer to this problem at the recent annual meeting of that organization, when several of the officers and committee chairmen were called on for five-minute reports, and discovered that it took 81 minutes of talking time to give 55 minutes worth of reports, or an average of 7.36 minutes per speaker. His detailed tabulation was as follows:

Perc Coomber—1 minute
 Carey Ostrander—2 minutes
 Bob Fisher—5 minutes
 Garret Smith—6 minutes
 Joe Ernst—6 minutes
 John Hoover—7 minutes
 Pete Wight—7 minutes
 Jim Cooney—9 minutes
 Curt Hart—10 minutes
 Walt Almond—10 minutes
 Pete Wight—18 minutes

Top honors in the loquacity and verbosity scoring go to Bob Fisher, the answer to a program scheduler's dream, who finished right on the button in his allotted time. A special award of merit goes to Perc Coomber, who recognized and demonstrated that brevity is the soul of wit. And extenuating circumstances are pleaded for Pete Wight, who had a dual assignment, holding just under the average for his report as Secretary-Treasurer, but was conceded to have an impossibly short time allowance in his comment on the commodity charts.

THE DULUTH City Council instructed the City P.A. to pull a double play on behalf of the park department by purchasing two horses for summer work, then to be slaughtered to augment the winter meat supply for the park zoo. The vote was not unanimous, Public Works Commissioner C. D. Goldsmith voting "Neigh" because it seemed to him to be the act of a Judas and he wanted no part of that role. His protest was mild compared to that of outraged horse lovers, locally and from as far off as Detroit, who bombarded the Council with strenuous disapproval. These protests went so far as to advocate abolition of the zoo. One correspondent characterized the whole procedure as an "assinine trick", which will probably bring the donkey lovers into the controversy next.

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 but they peel off in .002" (or .003") layers.



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Reduce lathe time; no standby machine required during assembly



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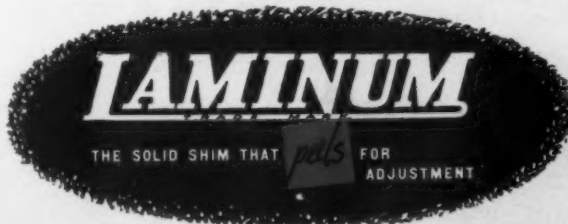


Adjustments right at the job by peeling laminations with a penknife



Precision cut to your exact specifications, with careful quality control

URGENT! Save production time! Shims are more important now than ever!
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GLENBROOK, CONN.

CUSTOM SHIMS STAMPINGS SHIM STOCK



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From its early days National Forge has produced alloy forgings, heat treated and machined to the exacting requirements of the Aircraft Industry.

We are proud that our facilities—the special electric steels, heat treating and skilled machining—have made it possible for us to assist the aircraft industry in pioneering the development of many mechanical components.

Pictured here are shafts for turbo-jet engines and rotor shafts for helicopters; both requiring the maximum in strength and resistance to fatigue, wear and shock. Their production, here at National Forge, started with the steel itself, and through successive steps of heat treatment and machining were brought through our plant under the closest metallurgical and physical control.

National Forge has complete facilities and assumes the whole responsibility of producing your forgings from the steel through finish machining. This service is yours for aircraft or for commercial forgings.



B.F. Goodrich GROMMET BELTS AT WORK



Steel cylinder half a block long spins like whirling top at Albers Dehydrating Company, Wisner, Nebraska.

Whirling steel kept town awake

This big cylinder weighs three tons. From June to September it spins like a top to dehydrate cattle feed. But the big gears that powered the machine were so noisy the whole nearby town of Wisner, Nebraska was kept awake—and objected. Strenuously. Engineers knew that rubber belts, used instead of gears, would be quiet, but ordinary rubber belts would have gone to pieces in a few months. An entirely new kind of belt was needed. To find out how the problem was solved, see the following pages.

Whirling steel (continued)



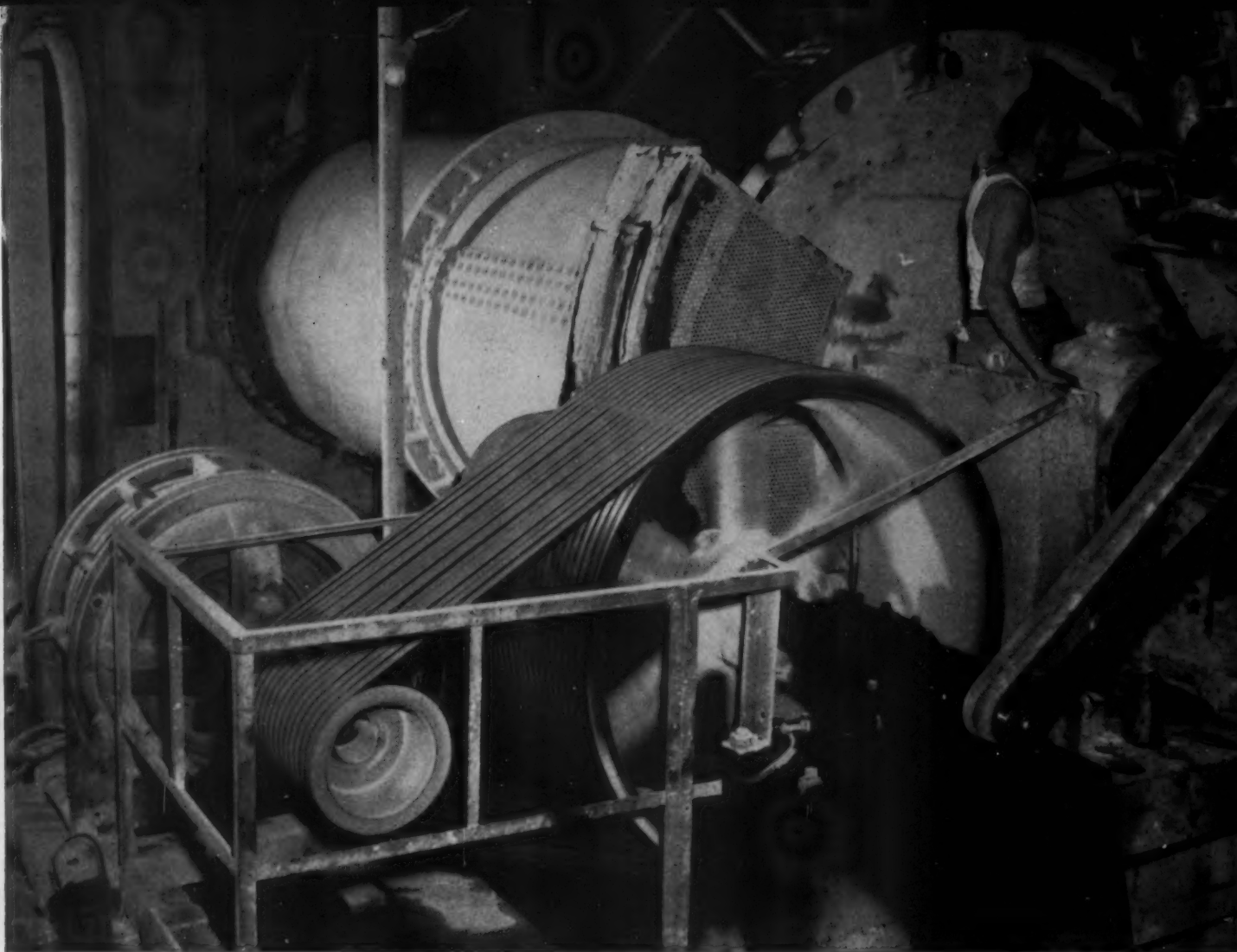
City council heard loud complaints before these belts were put to work turning cylinder shown on preceding page.



B. F. Goodrich Grommet Belt

Ordinary V-belt

NOT only did the company that operates this dehydrating cylinder want to make the whirling steel noiseless, they wanted to reduce operating costs, too. So they couldn't afford merely to install ordinary V belts. The local B. F. Goodrich distributor recommended B. F. Goodrich grommet V belts. They were installed and have been running for two seasons now, 7 days a week, and are still going strong. Now the town sleeps and the feed company saves 50% in operating costs.



It's so hot in this ball mill grinding hot sand that the fire sprinkler system, set at 190°, occasionally pops off.

Belts boil in hot sand mill

The V belts driving this ball mill help grind hot sand, heated to 260°, to a fluffy powder used for fine glass, pottery, cosmetics. Ordinary V belts were lasting one to two years. B. F. Goodrich grommet belts replaced them, have lasted over five years. Grommet belts stay cooler because they generate less internal heat and are made of a rubber that stands boiling temperatures.

Inside ordinary V belts made with multiple cords, there's a slight bump or "shoulder" where these cords overlap. This is the weak spot—over 80 per cent of belt breaks happen at this point. B. F. Goodrich grommet belts have no overlapping cords.

20 to 50% Longer Life

Patented grommet belts by B. F. Goodrich represent the only basic change since invention of the V belt. Belts last 20 to 50 per cent longer, depending on service. (The more severe the service

the greater the increase over ordinary belts.) Grommet belts have more rubber; they're more flexible, give better grip, less slip.

What is a Grommet?

A grommet is like a giant cable except that it's *endless*—a cord loop built up by winding heavy cord on itself. There is no overlapping cord *section* as in all ordinary belts. Most belt failures occur in these sections where cords overlap!

All Cords Put to Work

Each grommet and every part of a grommet carries its share of the load. In ordinary belts under high tension the center cords "dish" because tension is greater near the driving faces. Dished cords are doing less work, not pulling their share. Grommet belts have no center cords, there is no dish—therefore much more strength

in proportion to cord volume.

Better Grip, Less Slip

Grommet belts have more rubber in relation to belt size. Without any stiff overlap, they're more flexible, grip pulleys better. Size for size, grommet belts give $\frac{1}{3}$ more gripping power, pull heavier loads with a higher safety factor. Because there is less slip there is also less surface wear.

They Cost No More

You save belt costs because belts last longer, save production costs because machines keep running with fewer interruptions, save maintenance costs because they need less attention, yet cost not one cent more than others. Grommet belts are made in C, D and E sections. They are patented by B. F. Goodrich. No other V belt is a grommet belt (U. S. Patent Number 2,233,294).

B.F. Goodrich

GROMMET BELTS AT WORK



8-to-5 shift

Belts will never give full service when a drive is underbelted. But plant accidents happen. This is actually an 8-belt drive for a limestone crusher running seven days a week. The accident damaged three of the belts and no spares were on hand. The plant engineers had to let the remaining five belts run. They have done the job perfectly. The extra strength of the B. F. Goodrich grommet belts, at left, saved the plant a shutdown.

Other users' experiences show this extra strength too:

"... within a few days ordinary belts had stretched ... After six months of 24-hour-a-day service, BFG grommet belts haven't stretched at all ..."

"Our belt service was tripled when we changed to grommet belts ..."

"Ordinary belts lasted 5 or 6 weeks ... BFG grommet belts are in their sixth month of service."



Belts prevented shutdown at Calveras Cement Co.

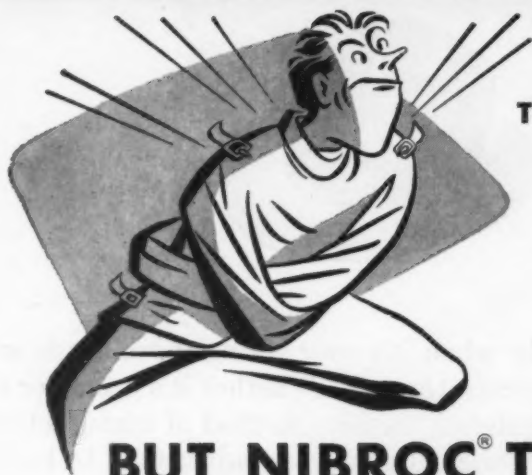
The three preceding pages tell you why B. F. Goodrich grommet belts differ from ordinary V belts with actual examples to prove that they outlast ordinary belts—sometimes 10 to 1, at no extra cost.

Grommet V Belts BY

B.F. Goodrich
FIRST IN RUBBER

The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio

IF TOWEL SUPPLY PROBLEMS ARE DRIVING YOU C-R-A-Z-Y



This will quiet
you down

OR

This will help
you forget them



BUT NIBROC® TOWELS WILL RELIEVE YOUR MIND IN NO TIME!

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Nibroc towels are made by one company from timber-cutting to finishing. One Brown Company machine alone can produce nearly 30,000,000 towels a day.

• NATION-WIDE DISTRIBUTION

No matter where you're located, a network of distributors and dealers, plus high mill production, insures prompt delivery of Nibroc towels.

• OUTSTANDING QUALITY

Nibroc towels are soft, super-absorbent, lint-free, economical.

• WORLD'S LARGEST SELLING TOWEL

Nibroc is the world's largest selling paper towel for industrial and institutional use.

• 4 NIBROC ACES

NO. 2220—white multifold towel of superior absorbency, strength and softness. Size, 9½" x 9½".

NO. 5010—brown multifold towel—an economy towel, tough, yet highly absorbent and soft. Size, 9⅞" x 12".

NO. 5020—brown multifold towel for schools, and industrial use where quick wipes are frequent. Size, 9⅞" x 9½".

NO. 5021—brown singlefold towel offering high quality performance at low cost. Size, 9⅞" x 10¾".

• NIBROC CABINETS

Modern, streamlined, sanitary, hold up to 50% more towels than ordinary cabinets.

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TEN HEADS ARE BETTER THAN ONE



especially when it's *your* spring those heads are concentrating on. Whether it's a matter of material, design, method of manufacture or deliveries, it's to your advantage to know that the best skills in the craft are instantly ready for group consultation and action.

Make these plants your partners in mechanical progress.

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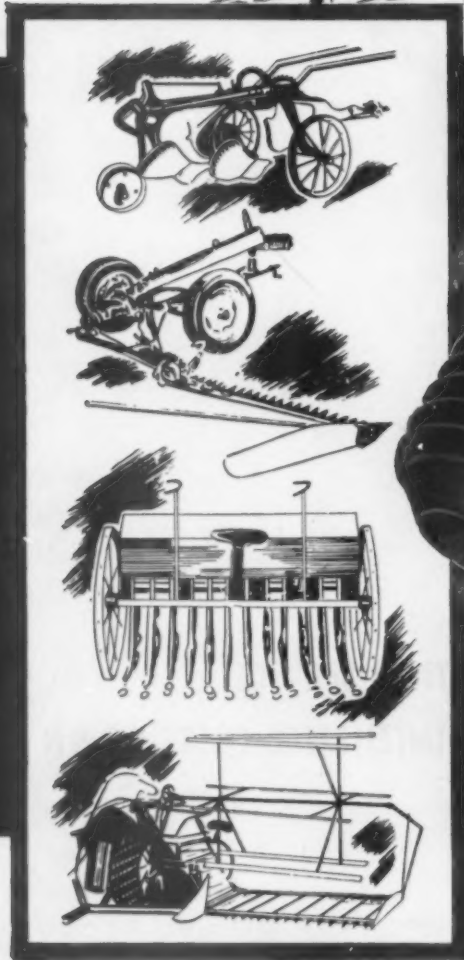
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SET Screws *by* FERRY CAP

TO hold parts rigidly in place—and to provide for quick, easy adjustment—makers of farm equipment and other machinery manufacturers specify "Ferry Cap Set Screws."

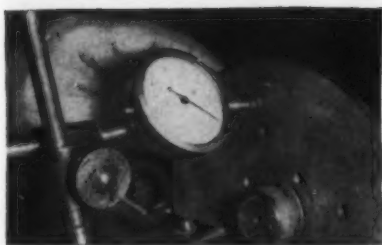
These set screws are case hardened—the hard point *bites in* and *holds*. They fit perfectly and respond readily to adjustment needs.

"Ferry Cap Set Screws" are expertly made by the first company to produce Cup Point Set Screws by the cold upset process of manufacture. They embody the skill and experience gained in 43 years of precision manufacturing.

Square head and headless—cup and oval point—case hardened—sizes $\frac{1}{4}$ " diameter and larger. Carried in stock for immediate shipment.

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CAP AND SET SCREWS • CONNECTING ROD BOLTS • MAIN BEARING BOLTS • SPRING BOLTS AND SHACKLE BOLTS • HARDENED AND GROUND BOLTS • SPECIAL ALLOY STEEL SCREWS • VALVE TAPPET ADJUSTING SCREWS • AIRCRAFT ENGINE STUDS • ALLOY STEEL AND COMMERCIAL STUDS • FERRY PATENTED ACORN NUTS



Be sure spindle and back plate run true.



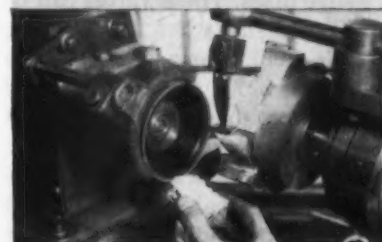
Mount on adapter to facilitate changing wheels.



Maintain correct wheel speeds for bond types.



Grind wet whenever possible.



Dress wheels only when necessary.



Use Norton training films on carbide grinding and diamond wheel operation.

Tips on Diamond Wheel Operation THAT WILL Lengthen Wheel Life and Cut Carbide Grinding Costs



AND ...Investigate The New K-Bond Crystolon Wheels*

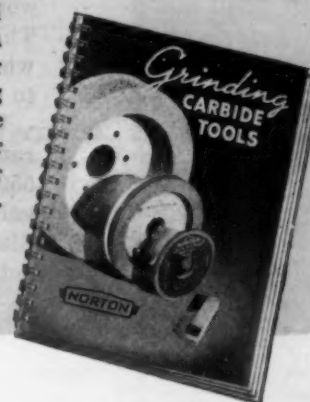
These faster, freer cutting silicon carbide wheels give you greatly increased uniformity of grinding action. This new vitrified bond is so accurately controllable that half-grade increments of hardness are possible — enabling you to “pin-point” specifications to your individual needs. In many cases Norton K-Bond CRYSTOLON wheels permit saving your more expensive diamond wheels for finishing, since they take care of numerous rough grinding jobs with entire satisfaction.

Your Norton Distributor

is your contact point for a vast store of knowledge covering every detail of abrasives and grinding — available through Norton Abrasive Engineers in every industrial center, and through the Norton specialists in Worcester. See your Norton Distributor for the right wheels to use in your carbide grinding applications, and ask him for this free 140-page booklet on carbide grinding. Or write direct for FORM 167. NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities.

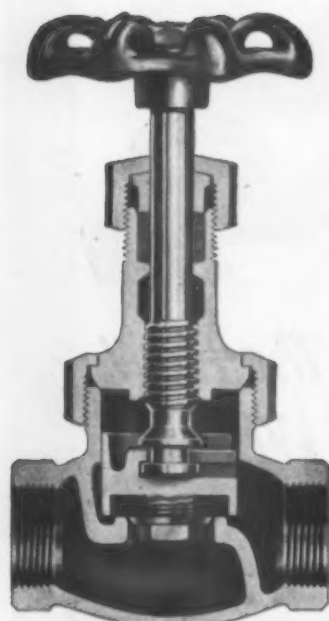
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NORTON
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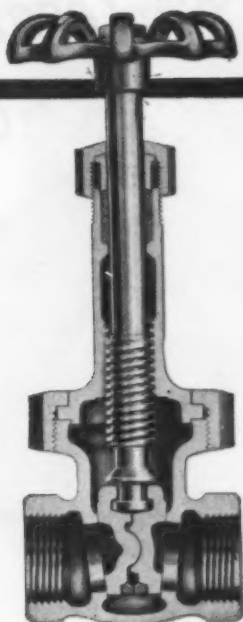


Making better products to make other products better

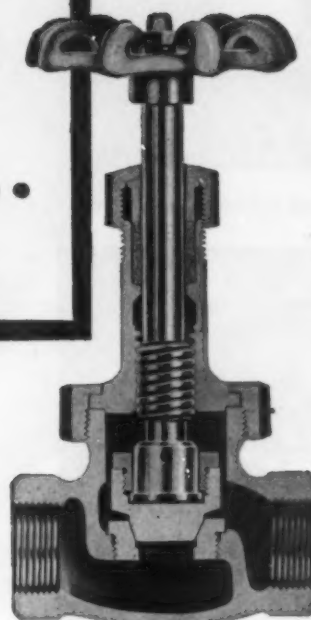
Walworth bronze valves...



Walworth No. 95 Globe Valve
Re-New-Disc



Walworth
No. 29 Gate Valve



Walworth No. 225P Globe Valve
500 Brinell Seat and Disc

**built to give
dependable trouble-free service
on all recommended jobs**

Walworth No. 95 Bronze Globe Valves (Angle Type: No. 96) are recommended for service where throttling is not required. They are rated at 150 psi working steam pressure, 500F; 300 psi cold water, oil or gas. The improved renewable disc and lock-on, slip-off disc holder — an original Walworth development — saves time and trouble. This valve can be repacked under pressure when fully opened. All parts are designed to give maximum service and strength.

Walworth No. 29 Bronze Gate Valves are rated at 200 psi working steam pressure, 550F; 400 psi cold water, oil and gas. These valves have rising stems and integral seats. Sizes 2-inch and smaller have union bonnets; sizes 2½ and 3-inch have bolted bon-

nets. Valves up to and including ¾-inch have solid wedge discs; 1-inch and larger have split wedge discs. These valves can be repacked under pressure when fully opened.

Walworth No. 225P Bronze Globe Valves (Angle Type: No. 227P) are rated at 350 psi working steam pressure, 550F; and 1000 psi non-shock service on cold water, oil and gas. The stainless steel, plug type seat and disc — heat treated to 500 Brinell — can be closed on sand, slag, scale and similar floatage, without injury to the seating surfaces. They are the longest wearing, **TOUGHEST** bronze valves you can buy.

For full information about Walworth Quality Bronze Valves, see your Walworth distributor, or write:



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GATE



ANGLE

WALWORTH valves and fittings

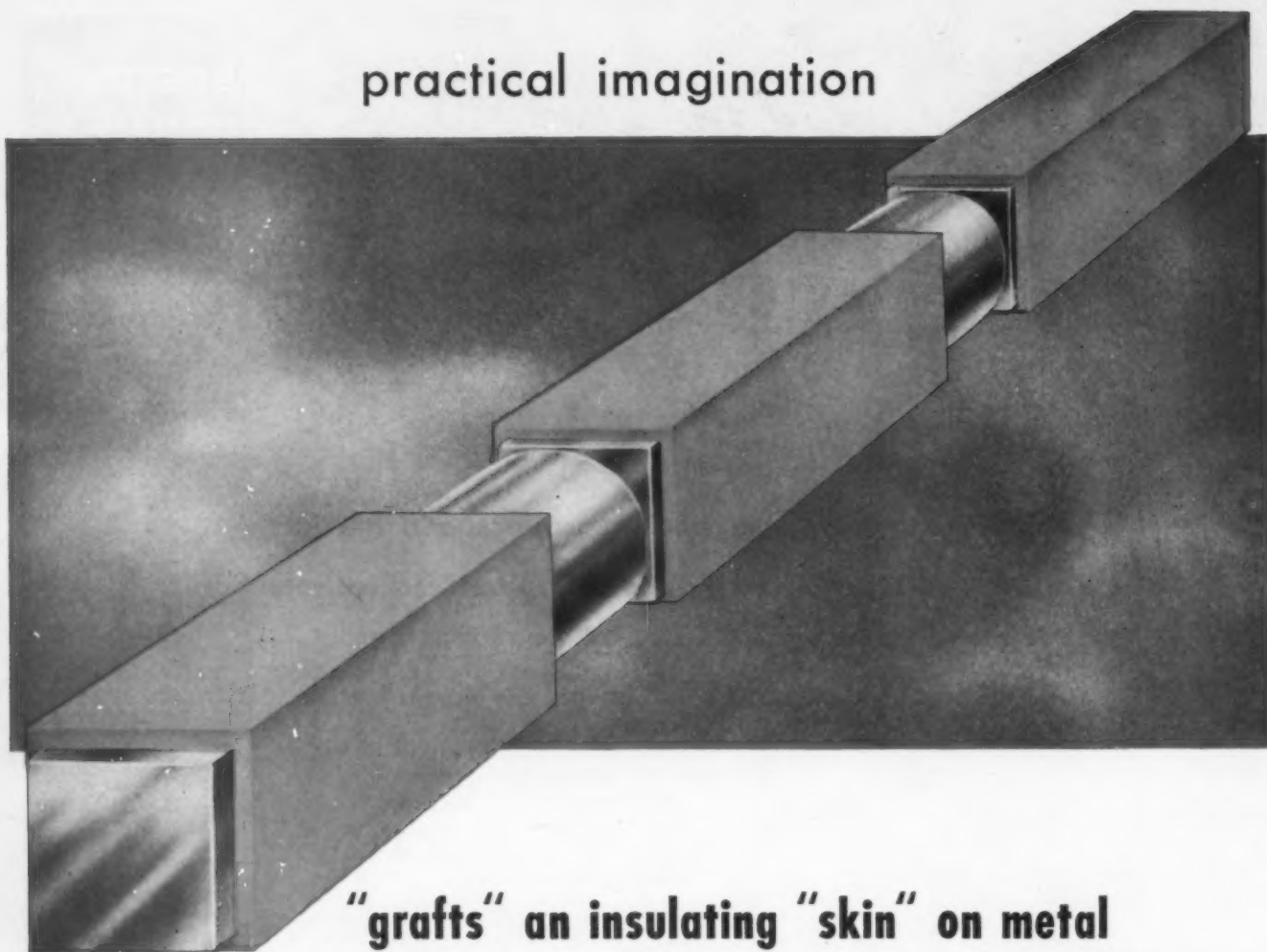
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NEW YORK 17, N. Y.



CHECK

practical imagination



"grafts" an insulating "skin" on metal

Here is another example of the practical imagination C-D engineers can put to work to solve your problems. In this case a heavy electrical connector had to be covered with a safe, efficient insulation. The material best suited to do the job was C-D Dilecto.

The next requirement was to make this insulation an integral part of the whole piece. Here is where practical imagination went to work. The solution was to laminate and mold the Dilecto directly on the metal bar.

When you have a problem involving plastics—whether it is simple or complex—be sure to check with C-D engineers for a practical, unbiased recommendation. They can choose the material best suited to your needs from a wide range of grades of five basic plastics to give you any combination of mechanical, electrical or chemical characteristics. A call to your nearest C-D office will bring you this kind of help any time—all the time.



your partner in producing better products

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Day-to-day advances in the design and manufacture of Westinghouse fluorescent lamps have led to these results: longer lamp life, uniformity in color, greater end-to-end brightness, and higher light output. These are the things that add up to *economical, top-quality* lighting. And they can be yours at no extra cost!



**LONG
LIFE**
RATED AVERAGE
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**7 5 0 0
HOURS**

Gives 2½ years of service
in average installations.

Lamp Division
Westinghouse Electric Corp., Bloomfield, New Jersey
Gentlemen:

I would like complete information about Westinghouse fluorescent lamps.

Name

Company

Address

P

Typewriter mainspring *redesigned*



for volume production at lowest possible cost

The American Quality Spring shown here is the absolute heart of a famous-make typewriter. It furnishes driving power for the entire typewriter—operates the drawbar, controls spacing between characters, drives the ribbon mechanism.

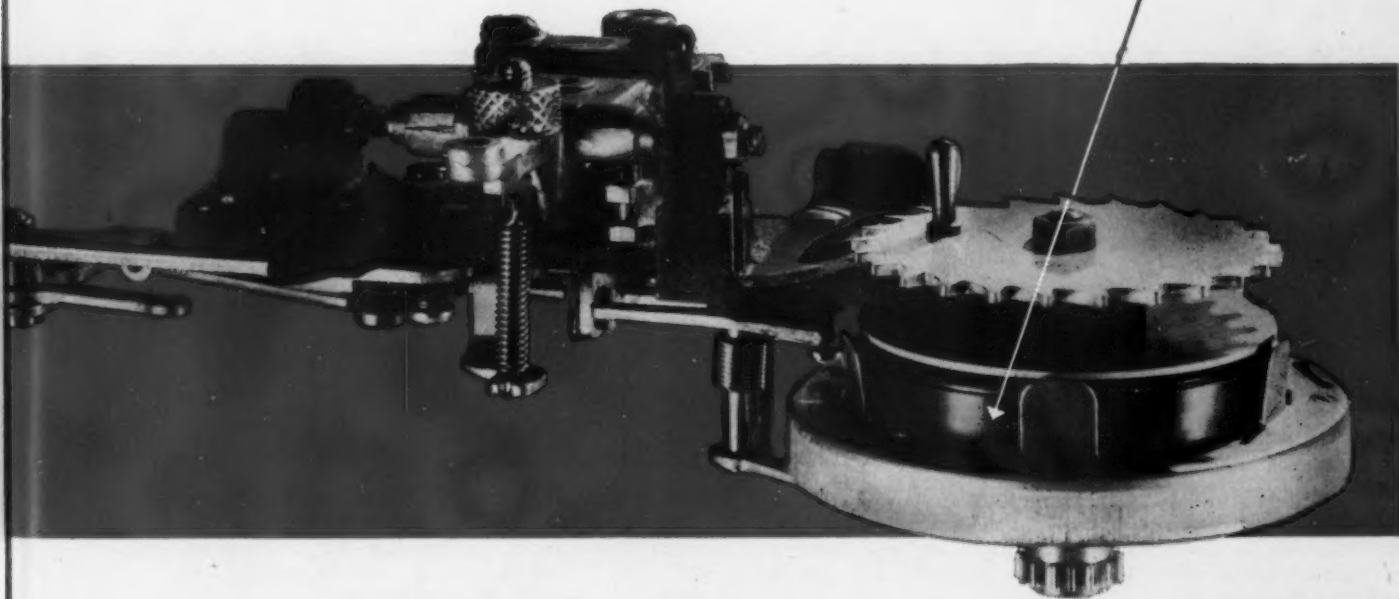
The spring is wound and unwound thousands of times every week, yet tension remains constant and breakage is almost unheard of.

To perfect the mechanical properties of the spring, our engineers worked hand in hand with the manufacturer's engineers. The design was altered to eliminate a weak spot that was responsible for breakage. This change was com-

bined with others that made the spring easier to produce in quantity—at a lower cost.

There's only one way to get such improved spring performance at an even lower cost: let us work with you in the early stages of design. Our designers are real experts on the mechanics and metallurgy of spring design. We know just what our modern spring-making machinery will do—and therefore we can help you design a better spring that is easier to mass-produce, cheaper to buy.

This is the mainspring drum bracket group on the typewriter mentioned above. The American Quality Spring is in position, ready for years of trouble-free service.



AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO • COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK



AMERICAN QUALITY SPRINGS

UNITED STATES STEEL

What! Air condition a furnace full of white-hot metal?

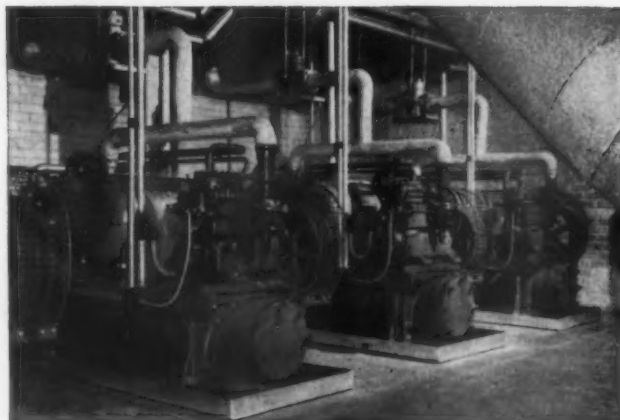
Sounds fantastic—yet it's actually only one of the *many* ways in which Frigidaire Air Conditioning is serving American industry today.

The pictures on this page show just three of the scores and scores of Frigidaire installations in factories all across the nation. These installations differ greatly in size and purpose. But all have one thing in common—

In every case, Frigidaire Air Conditioning is helping industry do a better production job.

How? By speeding up production—by cutting down on costly waste of materials and manpower—by assuring uniformly high product quality.

To American industry, this ever-increasing industrial use of Frigidaire Air Conditioning means better products at lower cost. To the entire nation, it means more efficient production of the goods we need for homes, farms, businesses—and for defense.



LESS WASTE. This Frigidaire installation has cut cast-iron scrap losses in half for an Indiana foundry. The equipment (above) cools, dehumidifies air fed into the cupola. Frigidaire Air Conditioning also reduces waste by protecting valuable inventories from the inroads of heat and humidity.



FASTER PRODUCTION. Damp air causes insulating paper used in electric motors to swell—result: production slowdowns, stoppage! But Frigidaire Air Conditioning in *this* storeroom keeps paper at just-right humidity—neither too damp nor so dry that it can crack, and cause short circuits.



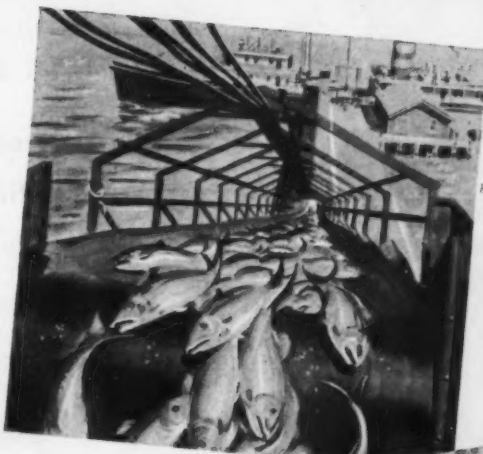
HIGHER QUALITY. The gauges these girls are using can measure to 1/200,000 in., but they'd be useless if the temperature of tested parts wasn't kept uniform by Frigidaire Air Conditioning. Frigidaire equipment is used in many precision operations where exact control of heat, humidity and dust is vital.

Frigidaire Air Conditioning and Refrigeration

Over 400 Refrigeration and Air Conditioning Products for Offices
Laboratories • Processing • Precision Assembly • Storage
Plant Lunchrooms • Medical Departments • Water and Liquid Cooling

You can belt down handling costs

NO MATTER what the material you have to move—inside or outside your plant—it'll pay you to investigate conveyor belts. The G.T.M.—Goodyear Technical Man—can analyze your problems drawing on experience gained from successful installations throughout industry—match your problems with others to prove that conveyors can be the most economical cargo-handlers. And he can choose from a wide selection of belt constructions to specify the one that will give you the longest, most trouble-free service on your particular job. Get in touch with the G.T.M. today by calling your nearest Goodyear distributor, or writing Goodyear, Akron 16, Ohio.



THREE TYPICAL G.T.M.-SPECIFIED CONVEYORS THAT ARE CUTTING COSTS

◀ Old-style chain conveyors outperformed by a Goodyear conveyor 3 to 1! Over 1,000 tons of fish per hour are carried into the processing plant of this fertilizer maker, at lower cost per ton than ever before.

Paper mills everywhere are turning to conveyors to handle logs, chips and other raw materials. Here, too, the G.T.M. has made appreciable savings by designing systems to replace former materials-handling systems, operate at lower cost.



▲ Assembly-line operations can be conveyorized, too—with Goodyear's CHEMIGUM belts that withstand the attack of oil 50 times as well as natural rubber. That means longer life—lower cost—fewer interruptions of output.

GOODYEAR INDUSTRIAL RUBBER PRODUCTS G.T.M.-Specified CONVEYOR BELTS

A few of the materials and service conditions that can be handled

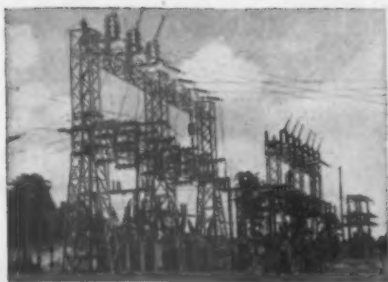
- Single flights up to 5 miles; lifts to 1500'
- Extremely abrasive materials
- Hot materials
- Rugged service on grading machinery
- Underground service in coal mines
- Sanitary handling of foods in canneries
- Extreme oil conditions
- Soupy materials, like cement
- Boxes and packages in plants and stores
- Packaged or bagged materials on inclines
- All types of grain handling

Chemigum—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING, RUBBER-COVERED ROLLS built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.

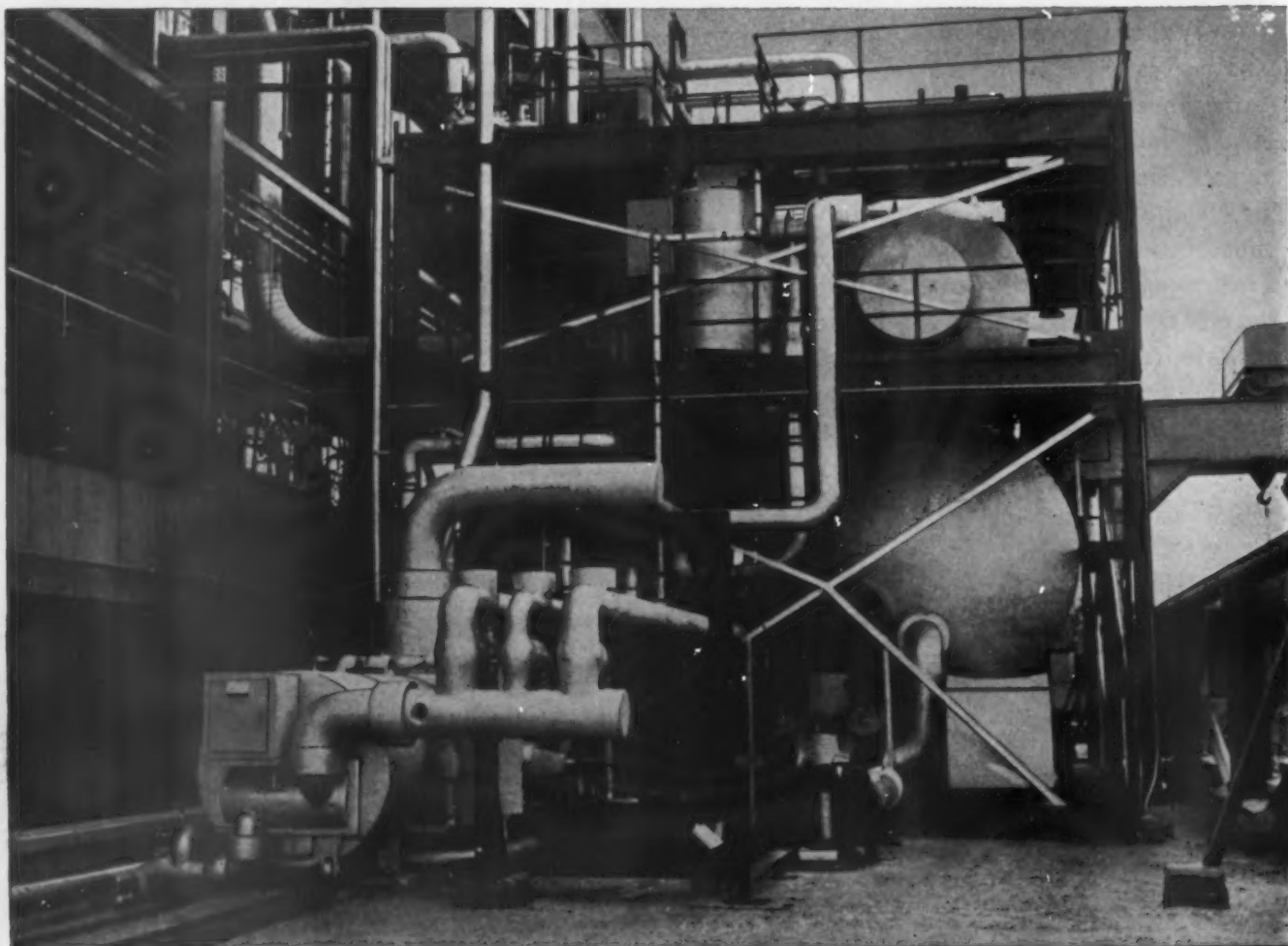
GOOD YEAR

THE GREATEST NAME IN RUBBER



Where heat is a production tool!

—Carolina Power and Light Company
uses K & M Insulations in Lumberton Plant



Steam plant, Carolina Power and Light Co. Lumberton Station. Shown are evaporator, evaporator pre-heater, deaerating heater, and storage tank. "Featherweight" 85% Magnesia used to insulate surfaces up to 600°F.; used in combination, with

K&M Hy-Temp to insulate surfaces above 600°. Weatherproof finish. ENGINEERS AND CONSTRUCTORS: Ebasco Service, Inc., INSULATION CONTRACTORS: Guy M. Beaty Company, Charlotte, N.C.

These Keasbey & Mattison Insulations deliver more steam at less cost!

You'll find Keasbey & Mattison insulations—K&M "Featherweight" 85% Magnesia, and K&M Hy-Temp—wherever exacting steam temperature control is a must—in power stations, steamships, oil refineries, chemical plants, hospitals. These two insulations have a reputation for their cost cutting services—"Featherweight" 85% Magnesia for temperatures up to 600°F.; and in combination with K&M Hy-Temp Insulation when difficult heat control situations arise in the temperature range from 600°F. to 1900°F.

Your Keasbey & Mattison Distributor, who is

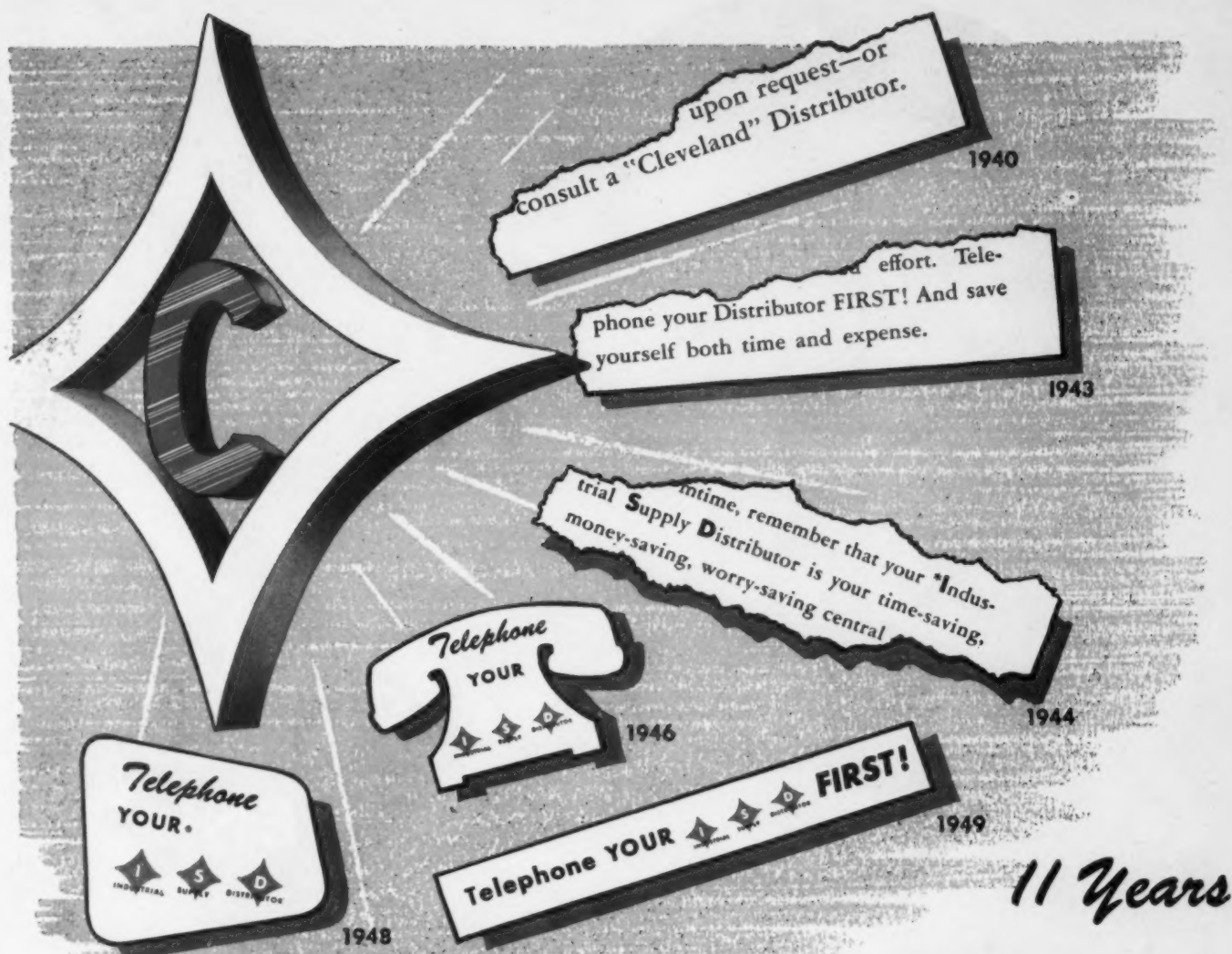
an experienced applicator, will be glad to give you complete information on any of the K&M Insulations for the 40°F. to 1900°F. service range. Or, write us.

Nature made Asbestos...


Keasbey & Mattison has made it
serve mankind since 1873



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Telephone Your Industrial Supply Distributor

★ For more than ten years we have been reminding you to “Telephone Your Industrial Supply Distributor” for prompt, dependable service on *Cleveland* Twist Drills, Reamers and other tools bearing the famous  trade mark. The arrangement of the words has been changed from time to time, as illustrated above—but the message always has been the same.

Since 1940 we have been making this suggestion month after month in all of our advertising—and it’s just as timely today. Whatever tools, equipment or supplies you may require, you will save time and money by calling your Industrial Supply Distributor *first*. Even in the case of hard-to-get items, you’ll find that often he is able to speed deliveries. For your Distributor is a favored customer of many factories; he has “first call” on their production.

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 Stockrooms: New York 7 • Detroit 2 • Chicago 6 • Dallas 2 • San Francisco 5 • Los Angeles 58
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(Traffic Manager, Corning Glass Works)

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AND CHOOSES...



Jim Green says: "We ship everything in the glass line from the newest type TV bulbs to rare and exclusive Steuben crystal. And choosing our 'cheapest way to ship' means checking more than rates alone. In addition to careful handling and safety, we check for

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. . . and Railway Express is the only transportation service that checks out on every count. For fast, safe shipping to multiple points throughout the country, Railway Express is our 'cheapest way to ship'."

ALWAYS ASK



THE EXPRESS MAN

Francis L. Wenderluch, 30 years an Express Man

Remember—

the trade marks "tt" and "TUBE-TURN" are applicable only to products of TUBE TURNS, INC.



tt 6-.280 347 SCH 40 ©S572

In special alloy piping systems, alloy TUBE-TURN Welding Lap Joint Stub Ends permit use of lower-cost carbon-steel flanges as shown in cut-away view.

Special alloys lick special piping problems



Write Dept. P-8 for free booklet "Pipe and Fitting Materials" which gives specifications, properties and welding procedures for various materials.

YOU can overcome special problems of corrosion, fluid contamination, pressure, or temperature by selecting pipe and welding fittings of special materials.

Tube Turns, Inc. continually studies the proper application of different materials to piping systems. The complete line of TUBE-TURN Welding Fittings is available in more than forty different alloys. Today's piping engineer can choose from intermediate and high alloy steels containing chromium, nickel, or both; commercially pure nickel, copper, and aluminum; and alloys of these.

Get in touch with your nearby Tube Turns' Distributor. You'll find one in every principal city.

"Be sure you see the double tt"

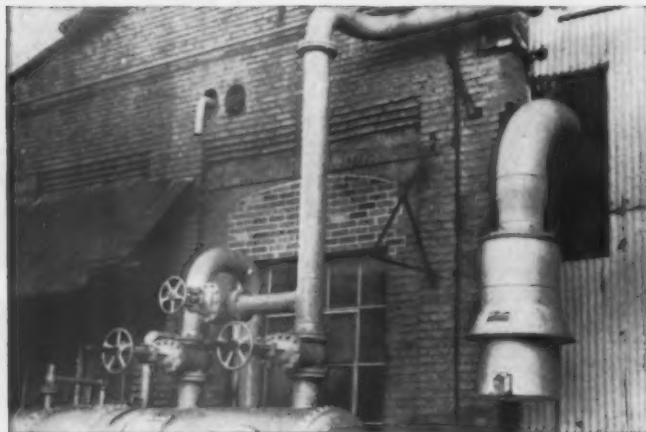
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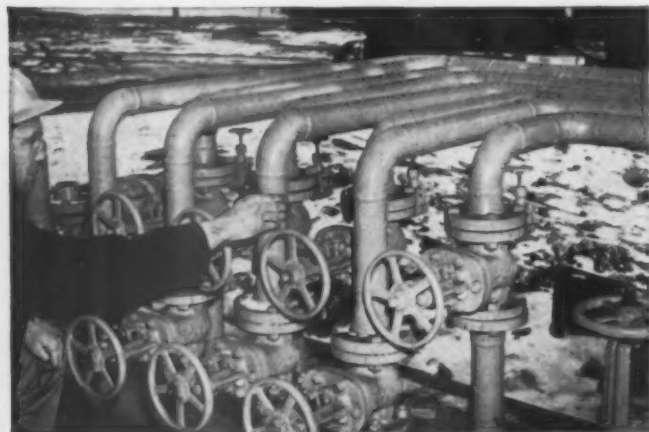
DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Chicago • Houston • Tulsa • San Francisco • Los Angeles
TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO... A wholly owned subsidiary of TUBE TURNS, INC.



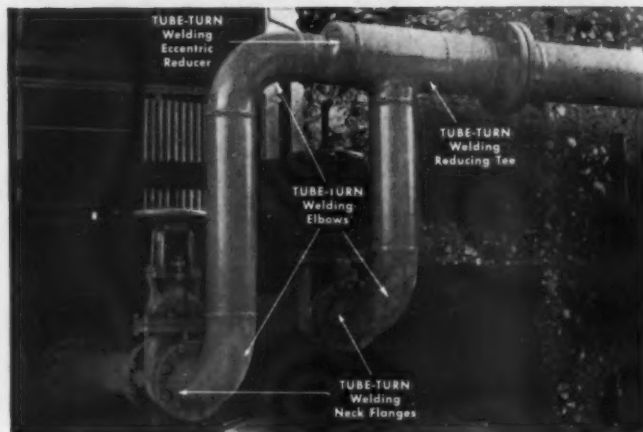
Piping construction simplified by wide range of TUBE-TURN Welding Fittings



Welding complex process piping calls for a wide variety of fittings and flanges. In this installation, air is drawn into compressor through a 16-inch line, connected to an outdoor filter through a TUBE-TURN Welding Reducer. Air at 100 lbs. is piped to the compressor tank through an 8-inch welded line.



Small lines tap off fire foam chemical manifold, lead to storage areas and other critical locations. Leakage or weak joints here could be disastrous. Welded piping with strong TUBE-TURN Welding Fittings makes this fire protection reliable.



Manifold serves air lines to various shops. Matching the two 8-inch lines to the 12-inch line here was no problem. Use of a TUBE-TURN Reducing Outlet Tee and a TUBE-TURN Eccentric Reducer made the construction job easy. The main line can be opened easily at the TUBE-TURN Welding Flanges.



In fabricating, welders appreciate the true circularity of TUBE-TURN Welding Fittings. To fill an immediate need, a welding elbow is often cut to make an odd-angle welding fitting. Unique forging process assures that TUBE-TURN Welding Elbows can be cut at any angle and still match the pipe for proper welds.

Want materials data?

Tube Turns, Inc. has prepared a booklet giving specifications, properties, and welding procedures for different pipe and welding fitting materials. If you'd like a free copy just send this coupon.

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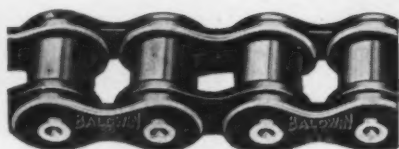
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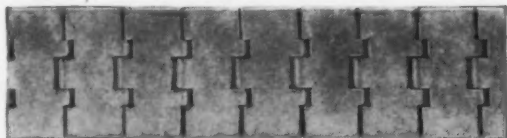
complete chain line



BALDWIN-REX ROLLER CHAIN, available in a complete range from 1/4-inch to 2 1/2-inch pitch for high speed power transmission and timing.



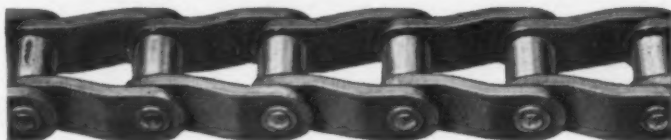
BALDWIN-REX DOUBLE PITCH ROLLER CHAIN for economical power transmission and conveying under slow speeds.



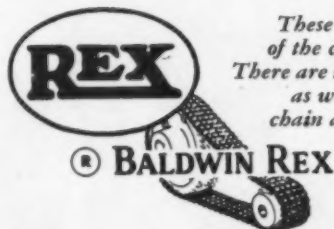
REX TABLE TOP CHAIN for conveying bottles, jars, cans, packages, small parts where smooth transfer and cleanliness are required.



REX PINTLE CHAIN, a drive and conveyor chain used where long life due to greater bearing area is needed.



REX CHABELCO STEEL CHAINS, available in a range of sizes from 1 1/4-inch to 36-inch pitch for drive and conveyor service under moderate to heavy loads.



These chains are representative of the complete Chain Belt Line. There are many other sizes and types as well as a complete range of chain attachments for every type of conveyor service.

Chain Belt Company

of MILWAUKEE

AUGUST, 1951

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GET IT OFF THE FLOOR
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ROOM TO WORK!

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CONTROL AT THE WORK WE
GET MORE DONE, AND
DO IT BETTER!



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• Diesel Engines • Crane Loaders • Pre-assembled Houses



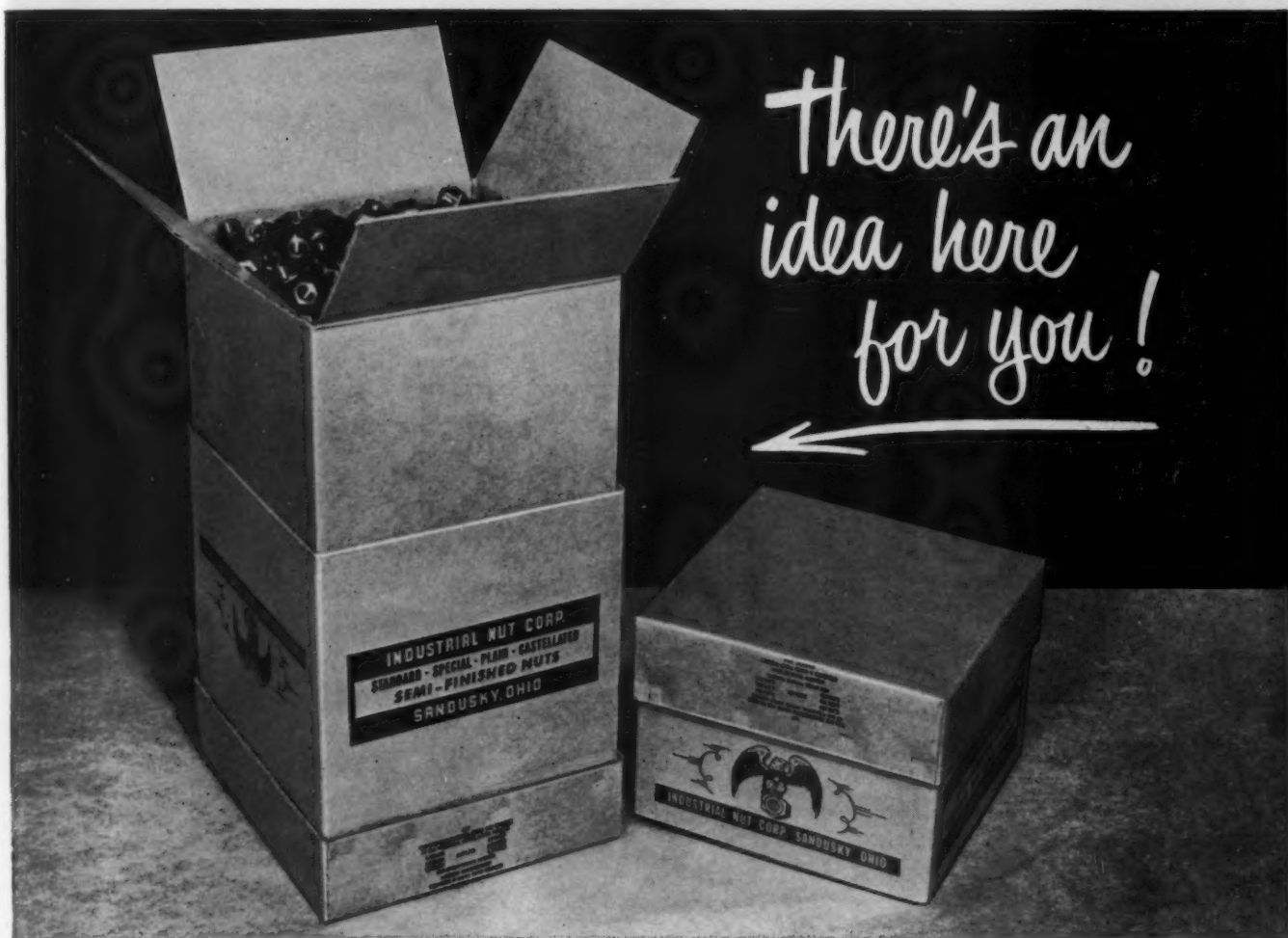
**Save floor space, cut welding time
for more production at lower cost
... use P&H AC Arc Welders with
exclusive Dial-lectric remote control**

Give yourself more room for your production needs. Mount your P&H Welder off the floor, out of the way.

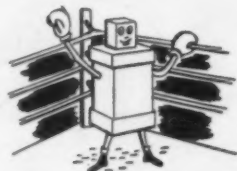
Dial-lectric remote control lets you do this. Your operator can turn the heat on *at the work*. It also cuts down his "walking time" ... turns it into *welding time* for increased output.

Besides saving space P&H Dial-lectric control eliminates cores, coils, sprockets, gears and other moving parts that cause excessive maintenance and downtime.

P&H AC Welders are available in a full range of sizes up to 625 amps. See your P&H representative or distributor for full details on how this outstanding welder can save you time and money.



PATENTED



This sturdy lightweight shipping box handles a heavyweight's job!

Nuts and bolts, castings, hardware, metal extrusions, nails, textile yarns and finished goods, and similar heavy and bulky products really give a shipping box a beating. Until this H & D lightweight came along, only "heavyweight" boxes could take such punishment. But with stitched caps on half outer liners that completely eliminate distortion in stacking, this low-cost box takes all the beating a heavy load can hand out. No wonder it cuts packing and freight costs!

For scores of ways to cut shipping costs . . . to lower packing costs . . . and to increase sales through better display, write for H & D's book, "How to Pack It." Hinde & Dauch, 5102 Decatur St., Sandusky, Ohio.

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Life-Line starter
PAIRED FOR PRODUCTION
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EXTRAS like these assure long-range performance

You get more than a motor and a starter when you install these Life-Lines. You get complete design, engineering and service every step of the way.

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"De-ion"® arc quenchers

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Application engineers for your daily problems

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All at your service without obligation.

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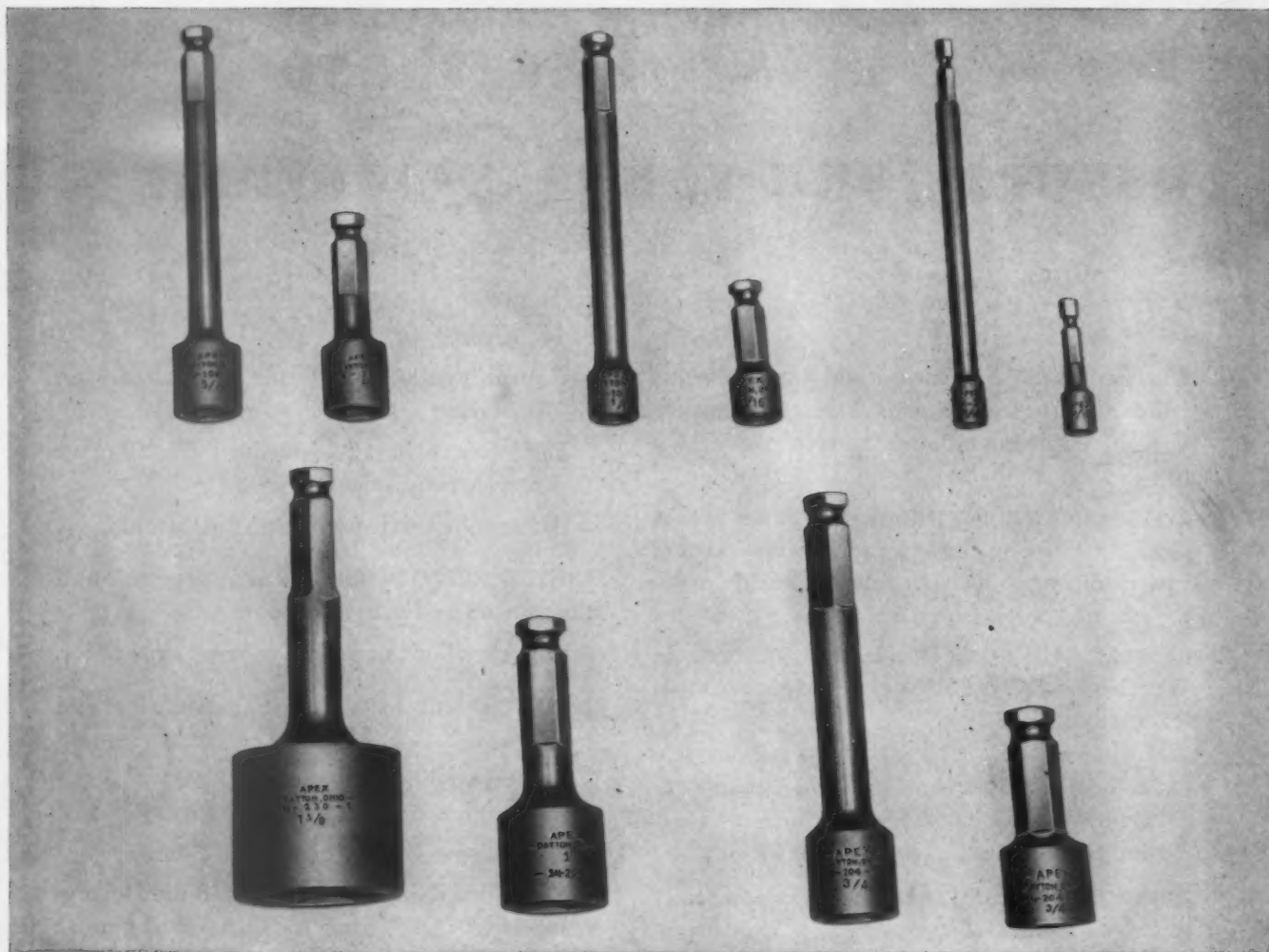
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MOTORS and CONTROLS



For increased torque...specify

APEX SN NUT SETTERS



• Power—applied straight from gun to work—that's the way Apex SN nut setters develop greater torque . . . permit faster, safer operation . . . help lower production costs.

These precision-built, one-piece tools have no movable parts, joints or locking devices to cause excessive torque loss, backlash or vibration. Operation is easier . . . on tools

and tool operators alike.

Apex SN Series nut setters are available with $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{8}$ " and $\frac{3}{4}$ " hex drives . . . broached hex openings, $\frac{1}{4}$ " to $1\frac{1}{4}$ " . . . broached square openings, $\frac{1}{4}$ " to $\frac{3}{4}$ ". Complete information on Apex SN nut setters and other money-saving Apex production tools is available in Catalog 29. Write, on your company letterhead please, for your copy.

APEX TOOLS

sockets, extensions, adapters

THE APEX MACHINE & TOOL COMPANY

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SAFETY FRICTION TAPPING CHUCKS • VERTICAL FLOAT TAPPING CHUCKS • SELF-RELEASING AND ADJUSTABLE STUD SETTERS • POWER BITS FOR PHILLIPS, FREARSON, SLOTTED HEAD, CLUTCH HEAD, HEX HEAD AND SOCKET SCREWS • HAND DRIVERS FOR PHILLIPS, FREARSON AND CLUTCH HEAD SCREWS • AIRCRAFT AND INDUSTRIAL UNIVERSAL JOINTS • SOCKETS AND UNIVERSAL JOINT SOCKET WRENCHES.



Adhesives eliminate screws, nails and rivets in many operations. Here a 3M adhesive is being applied to the rim of a washing machine prior to laying a rubber trim gasket to seal the cover when the machine is in operation.



Coatings are remarkable cost-cutters for metal working industries. Coatings protect metal from scratches and abrasions during fabricating, storing and shipping, eliminating extra repolishing. And they strip off easily!

ADHESIVES COATINGS 3M[®] COMPANY SEALERS



YOUR 3M SALESMAN HAS 1000 ANSWERS TO YOUR STICKY PROBLEMS

Whether it's an adhesive, a coating or a sealer, its usual requirement is *to stick*. That's 3M's speciality . . . making things stick. We have over 1000 stock formulas and one of these—or variations of one—can possibly fit your specific need.

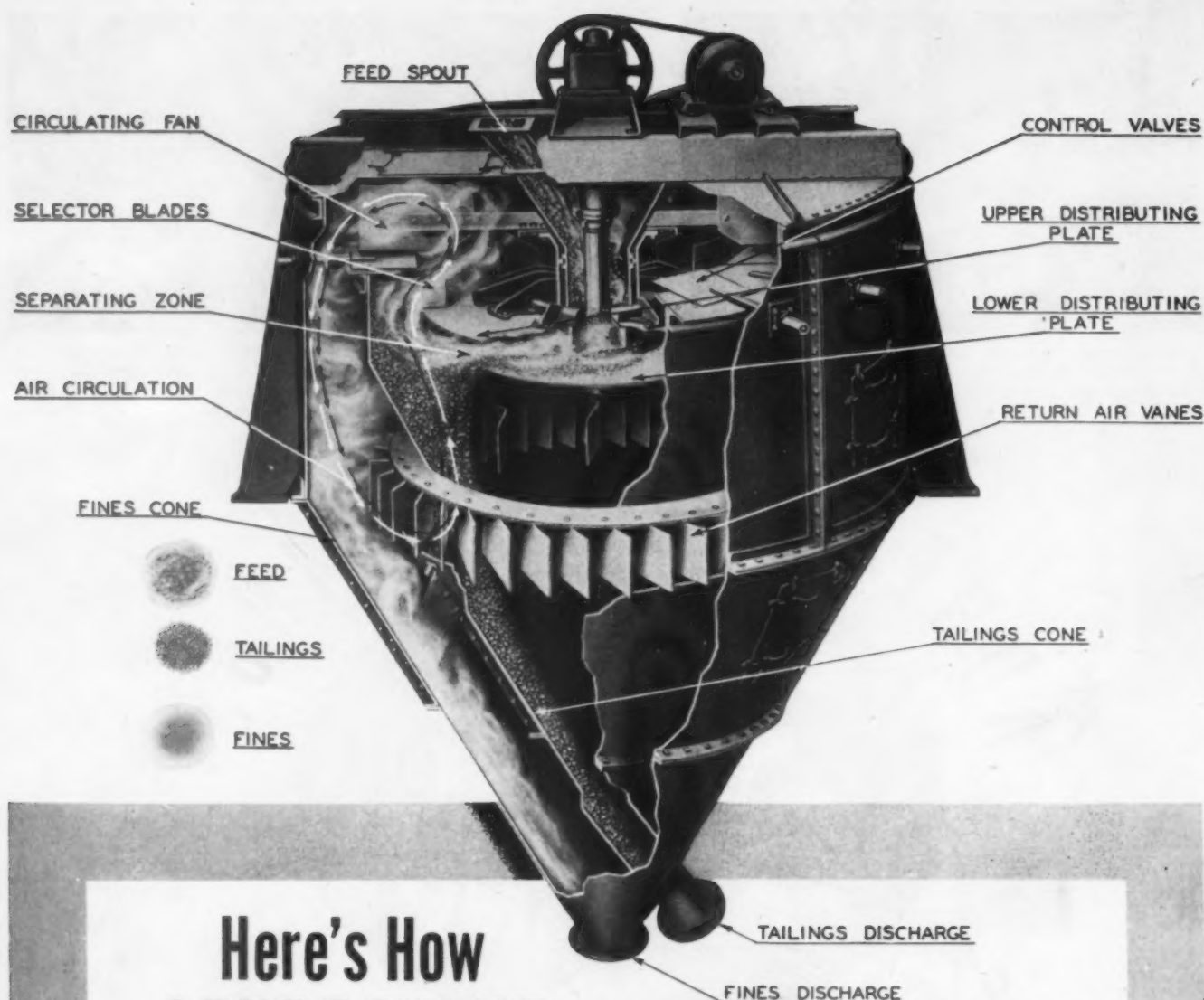
Beyond actual products, 3M offers *service*. Our research and development facilities are set up to help you find the right answer to your problem. 3M field engineers come into your plant and fit the *right* formula into your production . . . and stay until it is working!

These elements of experience, service, and thorough knowledge of adhesives, coatings and sealers, make it profitable for you to look to 3M for the solution of your adhesive problems. For prompt help on your adhesives problems, contact your 3M salesman or write directly to 3M, Dept. 78 in Detroit. Write also for our valuable, informative adhesives booklet.



Sealers in the aircraft industry meet tough operational requirements. This weatherproof sealer—being applied around the wing root fillet of a jet fighter—provides a resilient seal at sonic speeds, at temperatures down to -80°F .

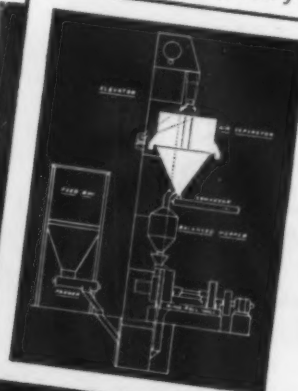
ADHESIVES AND COATINGS DIVISION • MINNESOTA MINING AND MANUFACTURING COMPANY
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Here's How STURTEVANT Air Separators Increase Production of Fines... Lower Separation Costs

- Sturtevant Air Separators effect production savings by increasing output by 25 to 300%... reducing power consumption by as much as 50%.
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- Capacities available from $\frac{1}{4}$ to 50 tons per hr.

Write for full details, today.



Sturtevant Air Separator in "closed circuit" with pulverizer. This combination increases tonnage and reduces costs in all types of industry.

Sturtevant Mill Company

107A Clayton Street, Boston 22, Mass.

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

Solve
YOUR LAMINATED
PLASTICS
PROBLEMS
AS EASY AS ...

It's as simple as that when you rely on Taylor
full-line service. Here's how and why:

1. If your problem demands *vulcanized fibre* that is exceptionally tough, high in dielectric strength, light in weight, easily machined, attractive in appearance, insoluble to most solvents and withstands abrasion, you can solve it with Taylor Vulcanized Fibre in sheets, rods, strips, or coils.

2. If your problem calls for *phenol fibre* or *glass melamine* and *silicone laminates* to meet specific electrical, physical, chemical or mechanical characteristics, you'll find the material you need in our wide range of grades. These versatile materials, too, are available in sheets, tubes, rods and strips.

3. If you are looking for a dependable source of supply for parts fabricated to your specifications, Taylor Fabricating Service is equipped to turn out precision-made parts on time, ready for your production line.

Next time you require laminated plastics, remember Taylor's *full-line* service—you'll save yourself time, trouble, money, and a lot of worry!

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Here is the new Taylor 62-page catalog. It contains specifications and description of Taylor Laminated Plastics. See for yourself how you can make your product or part better with the use of these plus-value materials. Write today for Catalog P8.

ADJUSTABLE PIPE HANGERS AND SUPPORTS

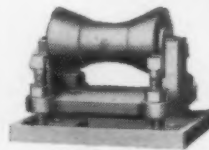
for every piping requirement

NO. 3 OF A SERIES
SHOWING
THE GRINNELL LINE

pipe rolls



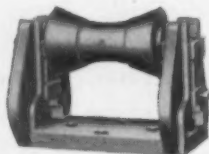
Pipe Roll and Plate
Fig. 277
2 to 30 in. pipe



Adj. Pipe Roll with Base
Fig. 274
Without base: Fig. 275
2 to 30 in. pipe



Adj. Swivel Pipe Roll
Fig. 174
2½ to 12 in. pipe



Adj. Pipe Roll
Fig. 276
4 to 30 in. pipe



Pipe Roll Complete
Fig. 271
2 to 30 in. pipe



Single Pipe Roll
Fig. 171
1 to 30 in. pipe

pipe saddles



Pipe Stanchion Saddle
Fig. 259
4 to 36 in. pipe



Adj. Pipe Saddle Support
Fig. 264
2½ to 36 in. pipe



Pipe Saddle Support
Fig. 258
4 to 36 in. pipe



Anchor Chair
Fig. 197
4 to 24 in. pipe



Pipe Covering Protection Saddle
Figs. 185, 186, 187, 188
Type A for 10 in. and smaller



Pipe Covering Protection Saddle
Figs. 185, 186, 187, 188
Type B for 12 in. and larger

Write for Hanger Catalog

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Grinnell Company Inc., Providence, Rhode Island

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pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
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**"HOW OFTEN DO YOU
SEE STEEL SALESMEN
TODAY?"**



**"MY SUPPLY COMPANY MAN
STILL CALLS REGULARLY
AND TRIES TO BE OF HELP
EVEN WHEN HE DOESN'T HAVE
EXACTLY WHAT I NEED."**



your best source of supply...

UNITED STATES STEEL SUPPLY COMPANY



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UNITED STATES STEEL

Here is *Exactly WHY* a V-Belt with **CONCAVE SIDES** Gives You *Longer Wear!*

To see for yourself how a V-Belt that has *concave sides* is certain to give longer wear, just make this simple test:—

Pick up any V-Belt you have at hand. Bend that belt as it bends around a pulley. As it bends, grip its sides between your fingers. Here is what will happen everytime.

If the V-Belt you are testing has *straight sides*, you can feel those sides *bulge out* as the belt bends. This out-bulge forces the sides of the belt to press *unevenly* against the V-Pulley and you naturally get *concentrated wear* just where the bulge is greatest—as shown in figure 1-A, at right.

Now, make this same test with the belt that is built with **Concave Sides**—the Gates Vulco Rope!

Whereas you felt an *out-bulge* when you bent a belt with straight sides, you find that the **Concave Sides** merely fill out and become *perfectly straight*. The sides therefore press *evenly* against the V-Pulley. This distributes the wear *uniformly* across the *full width* of the belt. Naturally, this means longer belt life and lower belt costs for you!

Only V-Belts made by Gates are built with **concave sides**. Whenever you buy V-Belts, be sure that you get the V-Belt with the **Concave Sides**—The Gates Vulco Rope!

What Happens When a V-Belt Bends

Straight-Sided V-Belt

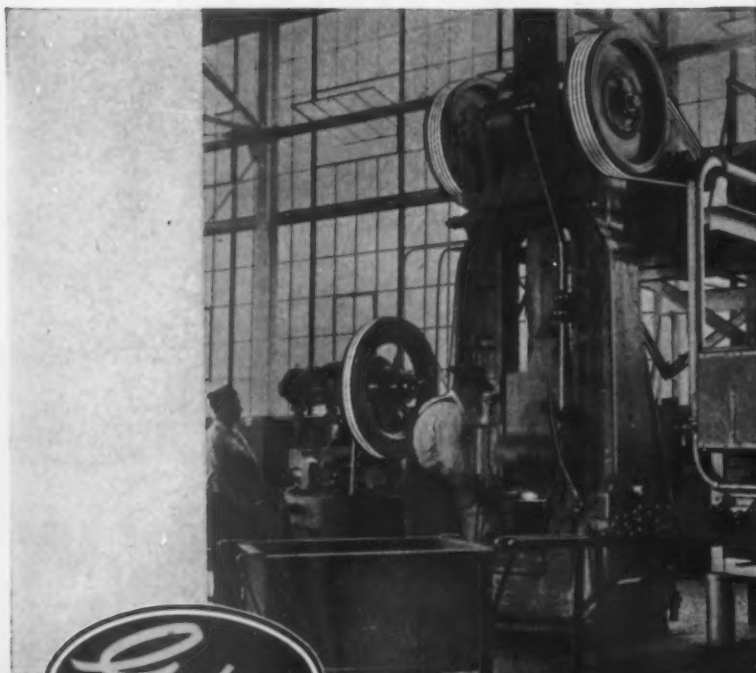


Gates Vulco Rope with Concave Sides



How Straight-Sided V-Belt Bulges in Sheave-Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear At Point Shown by Arrows.

The Concave Sides Fill Out to a Precise Fit in the Sheave Groove. No Side Bulge! Sides Press Evenly Against the V-Pulley — Uniform Wear — Longer Life!



This drop hammer in the plant of Korkick Manufacturing Company of San Francisco is operated by the Gates Vulco Rope Drives shown. Mr. W. H. Reiman, Plant Supt., says: "...a great improvement in the speed of the return stroke... gives us a positive drive without slip, yet one that absorbs the shock of picking up the ram repeatedly."

A CS-317

Gates

Hose V-Belts
Molded Rubber Goods
for Industry

VULCO ROPE DRIVES
ENGINEERING OFFICES AND JOBBER STOCKS
IN ALL INDUSTRIAL CENTERS

THE GATES RUBBER COMPANY

DENVER, U. S. A.

The World's Largest Makers of V-Belts

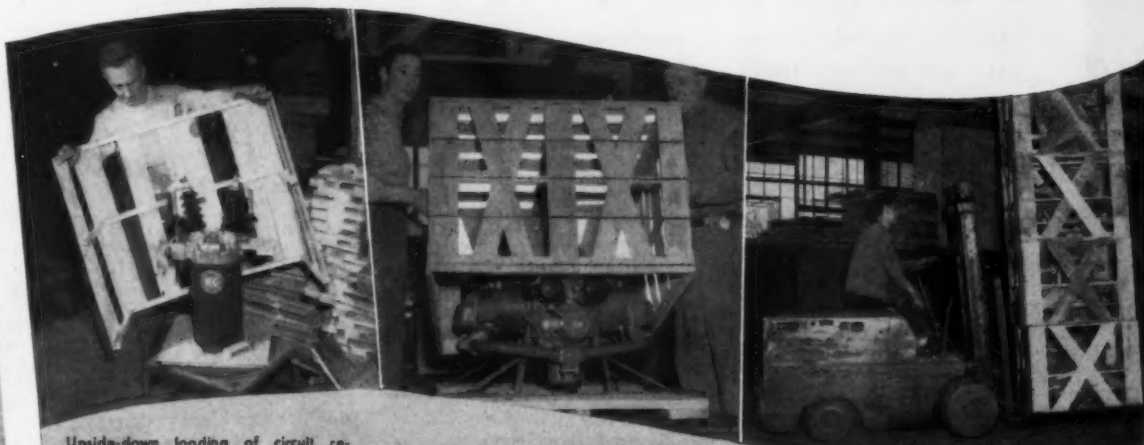
Now, more than ever before...

YOU NEED THE PROTECTION OF WIREBOUND BOXES and CRATES

Losses due to container failure have no place in an industrial economy facing material allocations and shortages. That's why you should investigate *Wirebounds*—which combine the strength of steel with thinner wood to bring you *better product protection at lower cost*. Three hundred graduate engineers of the Wire-

bound Institute have been technically trained to design tailor-made *Wirebounds* which assure damage-free product delivery. The value of this container engineering is clearly demonstrated in the following case histories. We will be glad to show you how these benefits apply to *your product*. Use the coupon below.

YOU CAN CUT DAMAGE CLAIMS LIKE THIS:



Upside-down loading of circuit reclosers caused breakage, leakage, sometimes irreparable damage in handling and transit. Since switching to Wirebounds, company reports damage claims have become negligible.

Using Wirebounds designed to "float" 400 lb. precision engines, this manufacturer chalked up a record of 3000 shipments in fifteen months without a single instance of damage in transit due to container failure.

Flexible power saw maker reduced shipping weight from 820 to 775 pounds, cut crating time 30%. Company stacks and handles units four high. Shipping damage due to container failure has been completely eliminated.

choose your course of action...

**Wirebound
BOXES & CRATES**

- ☐ Send me general information... complete descriptive book titled "What to Expect from Wirebounds."
- ☐ Send me specific information... tear sheets of case histories of packing products similar to mine.
- ☐ Give me direct action... send an Institute trained sales engineer to show the advantages of Wirebound packing for my own product.

NAME _____ POSITION _____
FIRM _____
STREET AND NUMBER _____
CITY _____ ZONE _____ STATE _____
OUR PRODUCT IS _____ IT WEIGHS _____

mail now to WIREBOUND BOX MANUFACTURERS ASSOC.
Room 1153—327 South LaSalle Street, Chicago 4, Illinois

Users names on request

...a Name to Remember

ACCO



TRADE
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when the Need Develops...

Consider the advantages of purchasing any one of the variety of products made by **American Chain & Cable.**

- Years of experience manufacturing products illustrated.
- Wide range of engineering practice.
- ACCO district offices throughout the U.S.A.
- Nearby distributors to serve you.
- Manufacturing responsibility and a determination to make ACCO products "intentionally better."

Write for information on the ACCO products illustrated.

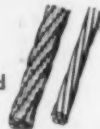
AMERICAN CHAIN

Weed Tire Chains, Welded and Weldless Chain, ACCO Registered Sling Chains
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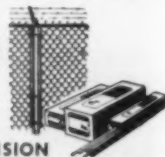
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KNOWLEDGE — IMAGINATION— GUTS

WHAT are the qualifications for competent purchasing under today's conditions? A business leader who came up through the purchasing department sums up the answer in just three words:

Knowledge
Imagination
Guts

A complete dissertation could be written upon each of his points, but he insists that this isn't necessary. Keep it simple, and take them in that order.

Knowledge is the basic prerequisite. Any one who doesn't pass this screening requirement can be written off at the very start. Any one can acquire knowledge, but many never bother to do so. Knowledge of what? Of anything that has to do with the problem—the product, how it is made, how it is used, why it is used, what it is worth, who makes it, how it is distributed, what it costs, which way the market is going, what may be used in its place.

Imagination is the faculty that lifts the job out of routine and makes it a continuing, constructive project. It is the ability to see the essential point in every problem and to explore all the various ways in which it might be answered. It is the ability to see a new product or process and visualize its pertinent applications. It is the ability to enlist the cooperation of associates and suppliers toward a desired end. Imagination is flexibility. It challenges every request with a query—"Can this be accomplished better or more economically?"

Guts is the capacity for following through, the determination to translate knowledge and imagination into effective results. It is the strength of character to stick to an honest principle. It is the moral stamina to meet temporary failure without discouragement. It is the courage and spirit to get up after a knockdown and move forward swinging. It is the will to win.

And don't forget, he adds, that these are the qualifications not only for today's buying, but for tomorrow and every day.

Stuart F. Henrity

***TODAY** in Chemicals and Plastics*

Chemical industries are busy producing! Extent to which chemical production has been stepped up is shown by recent statistics on total man-hours worked in selected industries. Present rate is 18-20% higher than corresponding period of a year ago.

More plant capacity is also under way. Most recent of Monsanto's new plants will go up in Idaho, adding tremendous production of elemental phosphorus. Already the world's largest commercial producer, Monsanto's new capacity is needed to meet still greater anticipated demands.

Lacquer and shellac manufacturers are showing high interest in two Monsanto products — Inhibitor 038 and DP solvent. Added to lacquers and shellacs before packaging, these products react to form a protective coating on the package interior, thus preventing contamination. If interested, write Monsanto, Merrimac Division, Boston 49, Mass.

Of interest to insecticide and herbicide formulators facing increased requirements of agriculture — NPA Chemical Division has just set up a new Agricultural Chemicals Section. Heading up the new section is Phillip H. Groggins, technical adviser to USDA's Bureau of Agriculture.

Newest development in Monsanto expansion is a plant to be erected at Pensacola, Fla., for Chemstrand Corp., a joint American Viscose-Monsanto project. New plant will produce nylon yarn — capacity 30 million pounds a year.

Alkyd resins are coming into increased prominence with paint and lacquer manufacturers. Formerly used largely in baked-on enamels, they are now finding uses in many types of paints and lacquers. They add many desirable properties to coatings, including production economies.

Users of plasticizers welcome orhonitrobiphenyl, commonly called ONB, because of its low cost and availability. As is generally known, it has a wide compatibility range and is therefore useful in many instances where comparable plasticizers may be in short supply. ONB is often used as a plasticizer extender.

Some relief from the chlorine shortage is in sight — in one case, plant expansion is under way to recover an additional 50% of present production tonnage.

Shortage of shipping containers — all kinds — is still an acute problem. Shipping of most classes of chemical materials will be greatly expedited if buyers will promptly return empties — tank cars, carboys, returnable drums . . . MONSANTO CHEMICAL COMPANY, 1700 South Second Street, St. Louis 4, Mo.



SERVING INDUSTRY...WHICH SERVES MANKIND

Highlights

This issue's important features summarized for the busy reader



The extraordinarily rapid growth of the aircraft industry within a short span of years, from relatively small and simple beginnings to the status of a large and complicated operation provides a vivid illustration of how the purchasing responsibility and organization develops to meet the new conditions. This is but one of several interesting angles in the story of **Lockheed's Buying**. (See page 77.) A purchasing program in which expenditures are made at the rate of \$4 thousand per minute and which has been instrumental in the establishment of 135 supplier industries in the immediate local area is newsworthy of its own account. Significant, too, is the use which has been made of this story in the company's employee relations program for a better understanding of what the purchasing department means to the industry, the community, and the individual.

Once again, **Expediting** looms large as a factor in effective purchasing and calls for close attention on the part of the purchasing officer. The analysis on page 84 shows where this activity fits into the over-all procedure and provides a comprehensive time-table for expediting action.

The study on page 88, tabulating the educational and experience background of a representative cross-section of purchasing men, gives factual information and projects useful policy on **Preparation for Purchasing**—a field of major importance for the future of the profession.

The necessity of working with government controls in purchasing raises a vision of red tape and paper work. But in the 1951 version of CMP, this has been kept at a minimum. The flow charts on page 71 indicate how the **Required Records** can be limited to a single card form per item, and how the simple entries are coordinated with stated procedure in the procurement and accounting on controlled materials under a variety of situations. A copy of the suggested form is shown. This is official information that will help you and your department.



There are two informative articles on **Materials Handling** in this issue. One of them discusses the need for a comprehensive over-all program to effect maximum cost savings, and presents a check list of factors to be explored in various departments before the decision is made on mechanized facilities. (See page 116.) The other (on page 86) illustrates an actual installation that has proved its effectiveness by meeting the needs of a plant where the production schedule quadrupled in recent months.

This month's **Guest Editorial** (page 69) is contributed by Howard Ahl, whose many important services to the advancement of purchasing include the general chairmanship of the recent N.A.P.A. convention—largest and most successful gathering of purchasing men in history. It is Mr. Ahl's thesis that the ultimate responsibility for professional advancement rests with the individual.

Anybody Can Buy. The keynote address at recent West Coast seminars on industrial purchasing does not take exception to this popular conception of the purchasing agent's job, but points out that it must be qualified by several "If's" if the job is to be competently handled and be of maximum service to the company. There is food for thought in this article. Turn to page 97.

The purchasing opinion poll reported in this issue is concerned with the currently vital need for putting the **Scrap Pile** to work to insure adequate production of new steel supplies. How purchasing agents are meeting this emergency is reported on page 75.

What does a purchasing agent do in the course of a typical day's work? An enterprising photographer followed one P.A. around, armed with flash bulb and shutter, to produce the picture story on page 92, depicting a day in the **Life of a Purchasing Agent**. He discovered that buying is not merely an office job, chatting with the visiting salesmen and signing impressive purchase orders. That was a part of his experience, plus a trip into the plant, a call to the receiving yard, and attendance at an Association luncheon. How's your day?



Do you buy **Thermoplastic Extrusions**? This relatively new product is finding scores of new uses in a wide range of commercial and industrial applications, with satisfaction and economy. But that satisfaction depends on accurate, detailed information as to the use and the conditions of use. The article on page 94 will help you to specify and purchase intelligently.

To date, the **Last In First Out** system of inventory valuation has been adopted primarily for tax purposes, but its proponents see in it a new and basic philosophy of accounting practice. Turn to page 109.

Are you making full use of these monthly departmental features compiled especially for the purchasing agent? The **Washington Previews** (page 13) keep you informed on current developments in governmental policy. Another section is devoted to **Office Equipment and Forms** (page 175). Informative **Trade Bulletins and Catalogs** listed on page 19 are yours for the asking. **New Products and Ideas** are also reported (page 128).

CMP

and Ryerson Steel Service

As you know, the Controlled Materials Plan went into effect July 1. The full extent to which CMP will affect our own operations and those of our customers is difficult to predict. But as of July 1, we are required by law to give the following precedence to orders for steel from stock:

1. Orders backed by CMP directives. These emergency CMP allocations of steel by the National Production Authority get the highest priority, as they did under CMP during World War II. Since directives are primarily placed with steel producers, the warehouse tonnage involved may not be large, but the kinds and sizes are likely to be those most in demand.

2. Authorized Controlled Materials orders. These orders, authorized by Government Agencies or Industry Divisions under CMP, received second highest priority, and they will probably account for a larger proportion of warehouse steel. A typical authorized Controlled Material order might bear the allotment No. K2-3Q51 in which K stands for the Agency or Division making the allocation; 2 represents the specific program involved, and 3Q51 stands for the calendar quarter in which the authorization is valid. It should be noted that the symbol DO-K2, used in conjunction with the K2-3Q51 authorization, is extended only for the purchase of finished products, such as chain, wire rope, fastenings, etc., or for non-controlled materials such as

plastic or babbitt, and is not used when ordering controlled material such as steel. Another important note: The NPA has just set up a blanket authorization to be used by manufacturers of certain products who require only small amounts of carbon or alloy steel for production purposes. The symbol employed is SU. For details see Direction No. 1 to CMP Regulation No. 1.

3. Orders bearing the old NPA DO ratings and calling for delivery before October 1, 1951. These orders bearing the DO symbol plus two digits such as DO-97 for Maintenance & Repair or DO-21 for Miscellaneous Defense requirements will remain valid during this change-over quarter, which ends October 1. Until then they have third highest priority.

4. Non-rated orders. With our tonnage considerably under last year and demand higher than ever, we may not be able to fill many of these non-rated orders—much as we would like to. For, of course, shipment depends on our having the steel in stock, no matter what the priority. But you can be sure that we will always do everything possible to help you get the steel you need.

★ ★ ★

IT IS IMPORTANT, therefore, that you give us the highest rating to which each order is entitled. And, in the case of oral or phone orders, be sure to send a written confirmation, including the rating which applies, within 15 days. As we are required to report all cases in which confirmation is not received, your cooperation on this point is important.

We appreciate the fact that many questions are bound to arise under the changing regulations prevailing today. So please remember that we are always glad to work closely with you on your steel procurement problems. Just call our nearest plant.

REQUIRED FOR CMP STEEL ALLOTMENTS.

One of the following CMP Forms must be used by manufacturers filing with NPA for authorization of schedules and allotment of steel.

Form CMP-4A. For prime and sub-contractors of Class A products.

Form CMP-4B. For manufacturers of Class B products.

Form CMP-4C. For prime and sub-contractors engaged in construction work and for manufacturers of Class A products used in such construction.

In addition, you may find helpful information in CMP Reg. No. 4 which concerns the controls governing the steel warehouse industry. For copies contact the National Production Authority's regional or field office near you.

RYERSON STEEL

STEEL-SERVICE PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • DETROIT • CINCINNATI • CLEVELAND
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

Growth through Education



.....By G. W. Howard Ahl

G. W. Howard Ahl is the man who, as General Chairman of the 1951 Convention Committee, was directly responsible for the efficient organization and smooth functioning of the biggest gathering of purchasing men ever assembled—any time, anywhere—when N.A.P.A. met at the Waldorf-Astoria in June. He had served well on the service desk in previous New York conventions and had demonstrated his quiet effective leadership in the affairs of the local group. The New York Association members knew what they were doing when they picked him to run the big show.

Mr. Ahl started out to make a career in architecture. A native of New York City, he studied at the Pratt Institute of Design and the New York University School of Architecture, subsequently broadening his training with studies at the Ecole des Beaux Arts in Paris and extensive European travel. Specializing in hospital design, he has a number of important and well known buildings in this field to his credit.

This promising start was abruptly terminated by the big depression of the '30s. Mr. Ahl took a job where he could find it. It happened to be in purchasing. Starting at the bottom of the ladder in the purchasing department of Columbia Ribbon & Carbon Mfg. Co., he progressed to the position of General Purchasing Agent for that organization. In 1948, he joined the purchasing staff of Philip Morris & Co., Ltd., as Assistant Director of Purchases.

He became a member of the Purchasing Agents Association of New York in 1937 and took real interest in its activities, serving successively on all of its committees. He was elected President of the Association in 1949 and National Director in 1950.

His life is filled with varied interests, and he has the faculty of excelling in whatever he undertakes. He was named to the All-American track team and held both the National A. A. U. and Y. M. C. A. titles in the standing broad jump. His mark of 11 feet 5 inches still stands as the unofficial amateur world's record in that event—unofficial simply because the event is no longer included in the standard track meet program. His photographs have won awards in the National Crafts and Arts Show and the New York Herald-Tribune photography contests. He has been secretary of the Lynbrook Camera Club and a member of the Eastman Kodak Consumer Market Research Committee. He has been a contributor to the *Architectural Record*, *The American Home*, and *Flower Grower*. He enjoys oil painting, wood carving, and miniature model railroading, and teaches classes in arts and crafts. He was committee chairman for the local Cub Pack No. 234, Boy Scouts of America, participates in Parent-Teacher Association activities, and was recently elected to the Board of Education, School District No. 12, New York.

THERE are plenty of examples of purchasing departments where both the man and the job enjoy the full respect and support of top management. These are not exceptional cases. Yet we also hear of other companies where this happy situation does not prevail.

I often wonder whether the lack of recognition of the purchasing agent by management, where it exists, is not due in large part to the limitations of the purchasing agent himself. He complains about the fact of being rarely included on the policy-forming and planning panels of his company. But does an evaluation of his qualifications really permit him to expect such consideration?

There are a great many detailed operations which make up the running of an organization. Success is based upon a completely coordinated and balanced administration of all the phases of production, purchasing, advertising, warehousing, distribution, labor, etc., etc. Although purchasing is extremely important in itself, a purchasing agent could contribute far more to his company's success if armed with a working knowledge of the many other functions of the organization and an appreciation of how his par-

ticular job fits into the picture.

To do a good purchasing job entails a great deal more than the mere signing of a purchase order. It requires an understanding of the aims and ideals of the company, the problems of integration faced by management, the why's and where-for's of managerial decisions. Good purchasing embraces a knowledge of manufacturing, traffic, economics, law, public relations, and the like. The purchasing agent who has confined his thinking to the operational limits of his own department can never hope to be an active member of management's team.

It is unfortunate for any purchasing agent to feel that the word "education" is to be associated only with elementary academic learning, and that participation in educational

programs is to be shunned as of little or no benefit. Experience is properly considered a good teacher. When experience is supplemented by education, the combination should be unbeatable.

The National Association of Purchasing Agents is cognizant of the importance of continued education. It has expended thousands of dollars, as well as enlisting the time and energies of top executive purchasing personnel in the constant endeavor to develop and present to all of its membership sound educational material covering the "three R's" of purchasing—not the familiar "reading, 'riting, and 'rithmetic" of the old rhyme, but

Reviewing
Reflecting
Restudying.

It is the hope of N.A.P.A. that these modern "three R's", seriously and conscientiously followed by purchasing men, with the aid of the many facilities for education that are now available, will be the means of broadening the powers of the purchasing agent so that he will be better qualified—not only to perform more efficiently the mechanics of purchasing, but, if called upon by management, to effectively demonstrate that he does possess something of constructive value to contribute to his company's policy, planning, and success.

We have gained in numbers, in N.A.P.A. Let us continue to gain in stature, for increasing service to our companies and increasing esteem in the eyes of the business world.

A Creed for Purchasing Agents

By J. B. Riceson

I believe:

... that purchasing is a profession requiring knowledge of many things, including the setup of industries and commodities, governments and current world affairs.

... that purchasing is the art of getting along with people, and of knowing values, with the courage to carry out honest convictions tactfully and sincerely.

... that purchasing is an honorable, exacting, and challenging career.

... that purchasing demands the best of my time, my knowledge, and my thinking.

... that the purchasing department of my company reflects the spirit of the company and of its personnel; that I contribute to that spirit, and rise or fall with it.

... that the purchasing agent must have sound ethical ideals.

... that the homely, old fashioned virtues of honesty, dependability, punctuality, and good will are the steps by which the purchasing agent must rise.

... that fear, suspicion, and hatred are words which must never appear in his vocabulary nor have a place in his make-up.

... that the purchasing agent must play no favorites if he wishes to achieve long range success.

... that he must not lose faith in himself, nor in people, to be always ready physically, mentally, and spiritually to carry on.

... that for management of all departments, the days of living in ivory towers or sitting on top of pedestals are gone forever, along with the words, "His Majesty".

... that department heads must be broad minded, progressive, and willing to introduce effective methods not only to do a better job, but to keep their associates and those with whom they come in contact contented, efficient, and loyal.

... that department heads cannot shift the blame for an assistant's mistake from their own shoulders, nor assume full praise for an employee's faithfulness, proficiency, and alertness.

... that the slogan "All for one and one for all" applies as well in the business world as in the Army.

... that the purchasing department is a place where men and women of all ages, of many dispositions, and of varied experiences, must work together effectively and

happily in fulfilling an important responsibility; and it is a good place to practice the Golden Rule.

... that individualism in helpers and other business contacts must be recognized and respected.

... that service is the answer to the question, "Why is a purchasing agent?"

... that no request is too humble to remain sidetracked for an indefinite time.

... that the excuse, "I can never get what I want," is the quack of a lame duck.

... that a purchasing agent should personally serve in his community and take an active interest in the affairs of his country, realizing that his freedom and everybody's freedom is his business, and cannot be purchased except by participation in those duties which make for freedom.

... that when any purchasing agent, no matter how conscientious, or hard working, or experienced, or exalted he may be, gets the idea that he is indispensable to his company and cannot be replaced, he should immediately grab his rubbers, for he is due for a long, long slide.

REQUIRED CMP RECORDS

Outline of the records and procedures for handling allotments of steel, copper, and aluminum under CMP. The National Production Authority has issued a complete pamphlet entitled "Allotment Accounting for Consumers under CMP." Copies are available through field offices of the Department of Commerce.

EVERY person, regardless of class of producer or class of consumer, who receives an allotment of a controlled material must maintain records to account for the receipt and use of the allotment.

Such records must show (a) the material being accounted for, (b) identifying program information, (c) the unit of measure, (d) the calendar quarter for which valid, (e) quantities received, (f) quantities reallocated to other consumers, (g) quantities ordered direct from suppliers, (h) the allotment balance available, and (i) dates and posting references.

The basic record suggested for this purpose is a simple allotment card because it is a flexible medium for keeping separate accounts for each allotment of controlled materials.

The heading of an allotment card should contain space for entering the allotment identification, the name of the controlled material, the unit of measure, and the calendar quarter during which the allotment is valid.

The body of the card should contain columns for recording date of entry, appropriate reference (see accounting examples in Section 11 following), quantities received, quantities reallocated to other consumers, orders placed, and the allotment balance.

Separate Records Required

There are three major factors which tell you whether you must establish a separate record of allotment. These are (a) the allotment identification, which for this purpose consists only of a letter and a

digit designating the particular program of a Claimant Agency or NPA Industry Division; (b) the kind of controlled material; and (c) the calendar quarter for which the allotment is valid. To illustrate:

A separate record must be established for each allotment identification. For example, if you receive two different allotments of carbon steel, one identified with the number A-1 and the other identified with the number B-2, you must keep a separate record for each separately identified allotment. If you should subsequently receive for use within the same quarter two additional allotments of carbon steel, one identified A-1 and the other A-2, the A-1 allotment may be entered on the A-1 allotment card you previously prepared, but a separate record must be established for the A-2 allotment.

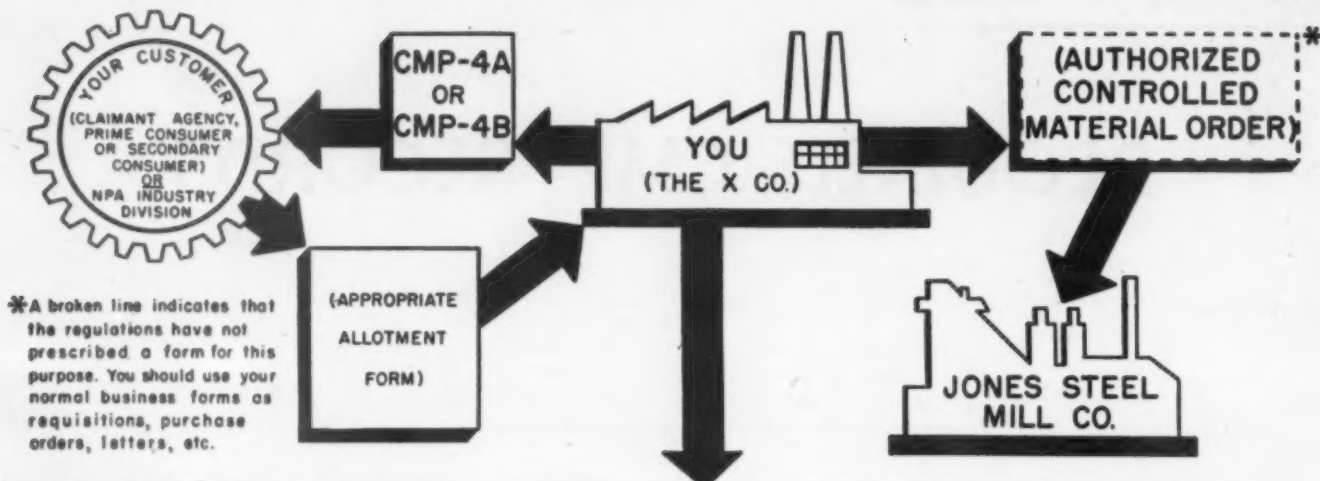
A separate record must be estab-

lished for each controlled material as defined in CMP Regulation 1. For example, you must maintain separate records for an allotment of carbon steel and an allotment of aluminum even though both allotments bear the same allotment identification number and are valid within the same calendar quarter.

A separate record must be established for each calendar quarter. For example, after having received an allotment of carbon steel identified as A-1 for use in the third quarter of 1951, you subsequently receive an additional allotment of the same material for the same program, *but for the fourth quarter of 1951, you must set up a separate record.*

There is no need for complicated records. A simple card or loose-leaf record of the type illustrated will meet every CMP accounting requirement.

[illegible]



ALLOTMENT IDENTIFICATION		CONTROLLED MATERIAL			UNIT OF MEASURE	QUARTER
Z-4		Carbon Steel			Tons	4-Q-51
DATE OF ENTRY (1)/1951		REFERENCE (2)	ALLOTMENTS RECEIVED (3)	ALLOTMENTS USED		ALLOTMENT BALANCE (6)
				REALLOTTED TO OTHER CONSUMER (4)	ORDERS PLACED (5)	
Aug.	15	Z-4	400			400
Aug.	17	Jones Steel Mill Co.			400	0

EXAMPLE I

The following example will illustrate your receipt of an allotment and its use by ordering the total quantity of the allotment directly from a producing mill.

(a) Assume the following: You the X Co.) make application for 400 tons of carbon steel for use in the fourth quarter of 1951. If you produce a class A product, you will ordinarily apply for your allotment to your customer on Form CMP 4-A. If you produce a class B product, you will apply for your allotment to an Industry Division of NPA on Form CMP-4B.

(b) Your customer (or appropriate NPA Industry Division) approves your application and on August 15, 1951, issues you an allotment for 400 tons of carbon steel identified by an allotment number and valid within the fourth quarter of 1951.

(c) Upon receipt of the allotment you should record, from the allotment form, the following information:

Allotment identification — Z-4. (This code identifies the Claimant Agency or NPA Industry Division program from which the allotment originally stems.)

Controlled material — Carbon steel.

Unit of measure — Tons.

Quarter — Fourth quarter of 1951.

Date of entry (column 1) — August 15, 1951.

Reference (column 2) — If your allotment is received from other than a Claimant Agency or Industry Division such as a reallocation from the "A" Co., your reference entry in column 2 would be simply "A" Co."

Allotment received (column 3)—400.

Allotment balance (column 6)—400.

(d) On August 17, 1951, you place an authorized controlled material order with the Jones Steel Mill Co. for 400 tons of carbon steel. No particular form is prescribed for an authorized controlled material order but it must contain the following data:

(1) The quantity of controlled materials ordered, expressed in the same unit of measure as the allotment you have received, and in sufficient detail to permit placement on the mill schedule.

(2) An allotment number consisting of the letter and digit representing the program number of a Claimant Agency or Industry Division, and the calendar quarter during which the allotment is valid.

(3) A certification, *verbatim* with that prescribed under CMP Regulation 1, representing that you are authorized to obtain the controlled material covered by your authorized controlled material order.

(4) The date, or dates, on which delivery is required. Remember that your controlled material producer must get your order within whatever advance time limit is prescribed by CMP Regulation 1.

Upon placing your order for 400 tons of carbon steel with the Jones Steel Mill Co. you should record the following information on the second line of the allotment card you have established:

Date of entry (column 1)—August 17, 1951.

Reference (column 2)—Jones Steel Mill Co.

Allotments used, orders placed (column 5)—400.

Allotment balance (column 6)—0.

EXAMPLE II

This example illustrates your accounting for the receipt of an allotment and its use (a) by reallocoting a portion of it to another consumer, and (b) ordering the balance directly from a producing mill.

Assume the same facts with respect to procurement of your allotment as those in example 1. You (the X Co.) then place an authorized controlled material order for 300 tons of carbon steel on August 17, 1951, with the Jones Steel Mill Co., and on August 18, 1951, reallot the 100-ton balance of your allotment to the Y Co., which is one of your subcontractors, on the basis of an application made to you by the Y Co. This will require the following accounting steps:

(a) Upon receipt of the allotment, you will make entries on an allotment card identical to those shown in example 1 (c).

(b) Upon placing your authorized controlled material order with Jones Steel Mill Co., you will record the following information on

the second line of the allotment card:

Date of entry (column 1)—August 17, 1951.

Reference (column 2)—Jones Steel Mill Co.

Allotments used, orders placed (column 5)—300.

Allotment balance (column 6)—100.

(c) The Y Co., being a class A producer, will have made application for an allotment to you (the X Co.) on Form CMP-4A. Upon your approval of the Y Co.'s application you will give Y Co., on Form CMP-5, "Short Form of Allotment," or other appropriate allotment form, an allotment for 100 tons of carbon steel and a certified delivery order for the class A product to be produced by the Y Co. from the allotted materials.

Note here that the Y Co. will record the receipt and disposition of the allotment as was illustrated for you (the X Co.) in (a) and (b) above, the only difference being that Y Co. will enter your company

(the X Co.) as reference on line 1, column 2, of the allotment card, and will enter the name of the mill with which they place their order on line 2, column 2.

If the Y Co. should reallot a portion of the allotment received from you to the Z Co., another secondary consumer and class A producer, the procedure would be the same as described above for your reallotment to Y Co. Thus, the fact that you are a prime or secondary consumer is material only in its effect on the application procedure, and has no effect whatever on allotment accounting procedure.

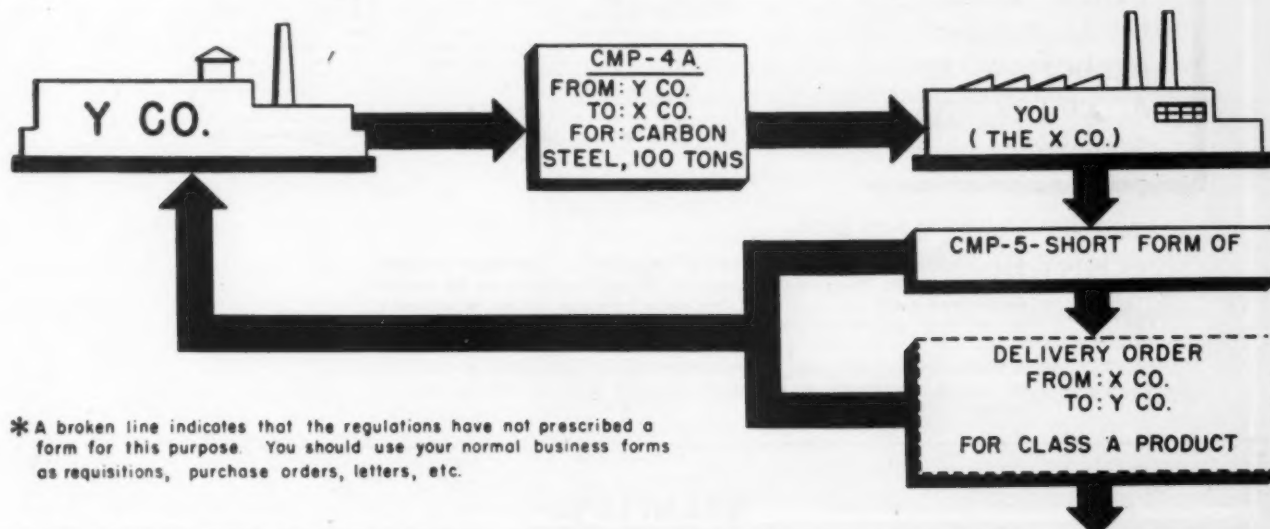
(d) Upon reallotting the 100 tons of carbon steel to the Y Co., you will record the following entries on the third line of the allotment card:

Date of entry (column 1)—August 18, 1951.

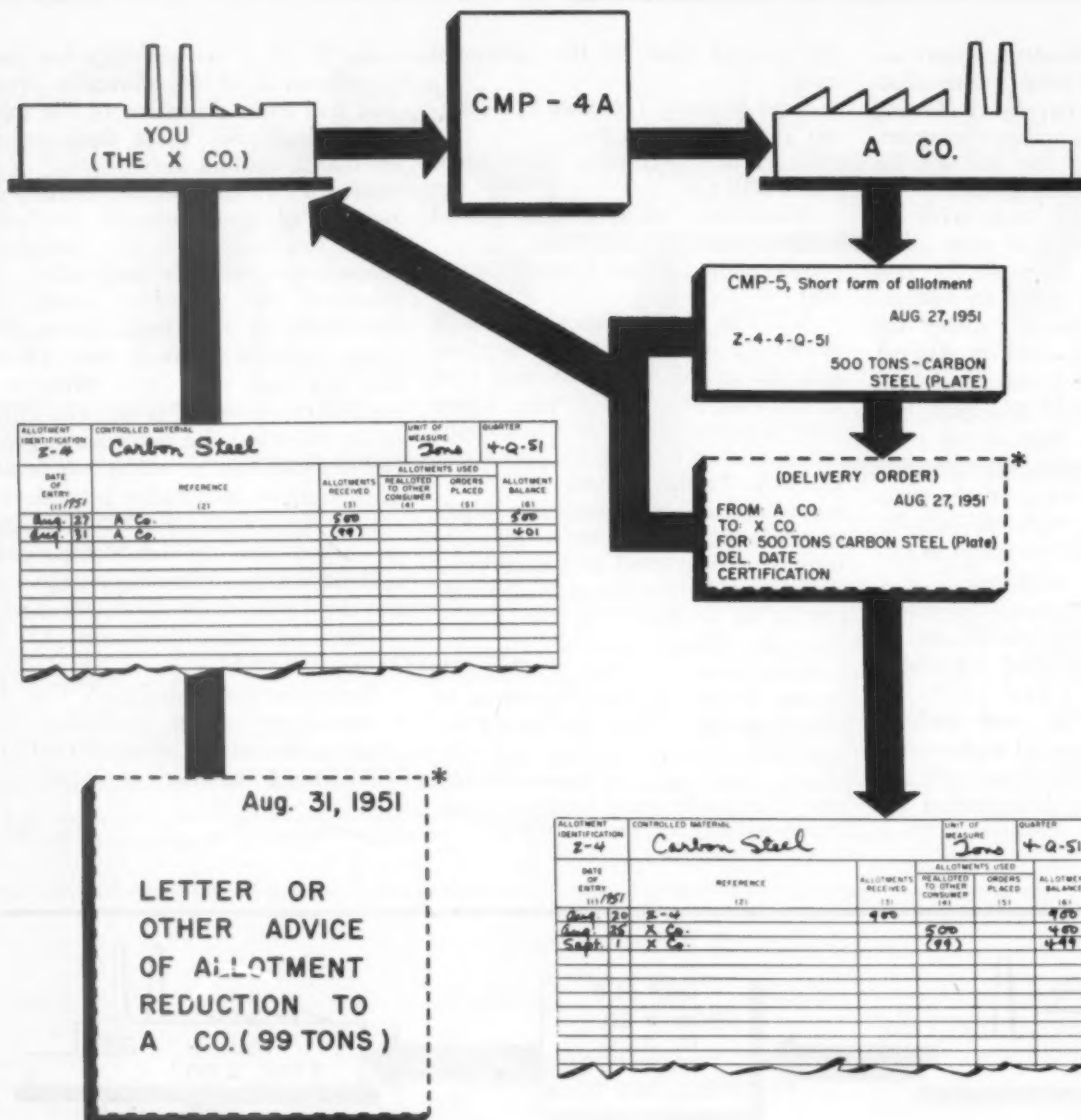
Reference (column 2)—Y Co.

Allotments used, reallotted to other consumers (column 4)—100.

Allotment balance (column 6)—0.



ALLOTMENT IDENTIFICATION		CONTROLLED MATERIAL			UNIT OF MEASURE	QUARTER
Z-4		Carbon Steel			Tons	4-Q-51
DATE OF ENTRY		REFERENCE	ALLOTMENTS RECEIVED	ALLOTMENTS USED		ALLOTMENT BALANCE
(1) 1951		(2)	(3)	REALLOTTED TO OTHER CONSUMER (4)	ORDERS PLACED (5)	(6)
Aug. 15		Z-4	400			400
Aug. 17		Jones Steel Mill Co.			300	100
Aug. 18		Y Co.		100		0



NOTE 1: () Indicates a red figure

NOTE 2: When adjustments are made as a result of decreases or increases in allotments received or used, they should be entered in the same column as the original allotment which is being adjusted. This makes it possible for you to calculate at any time your net allotments received or net allotments used

* A broken line indicates that the regulations have not prescribed a form for this purpose. You should use your normal business forms as requisitions, purchase orders, letters, etc.

EXAMPLE III

This example shows the accounting entries required to record the cancellation or return of an allotment or part of an allotment.

You may cancel or reduce an allotment by notifying in writing the person to whom you made the allotment. You may cancel or reduce an allotment you yourself have received by notifying in writing the person from whom you received it. In either case your accounting records must show the reduction in allotments.

Remember, however, that if an allotment made to you is cancelled or reduced, you must cancel or appropriately reduce all allotments or orders which you have issued or placed on the basis of that allotment. In other words, you must pass the cancellation or reduction "down the line." Alternative procedures for doing this are provided in CMP Regulation 1.

To illustrate, the A Co. allots 500 tons of carbon steel to you (the X Co.). You make the re-

quired entry on your allotment card. Then you decide that you will need only 401 of the 500 tons of carbon steel allotted you to fulfill your production schedule. You return 99 tons of the allotment by making an entry on the allotment card and notifying the A Co. by letter or other advice.

Note that the accounting would be exactly the same if A Co. has notified you of a cancellation or reduction in the allotment it has made to you.

Is The Purchasing Department Helping To GET IN THE SCRAP?

This month's survey throws important light on how industry is responding to the urgent pleas of steel mills, and others, to turn in desperately needed scrap. An unusually large number of replies has given a broad picture of scrap collection policies in various companies, techniques employed, and results obtained. Because of the vital importance of this subject, and the large amount of valuable information obtained in the poll, a full-length article based on it will appear in a forthcoming issue.

① Is the disposition of scrap materials handled by the purchasing department of your company ?

Yes —  81 %
No —  19 %

② Is the responsibility for collecting and segregating scrap assigned to any particular department? If so, what department ?

More than 50 different departments were named. (Presumably many are duplications, since similar functions are variously designated in different companies.) Maintenance & engineering was named most often (15%), closely followed by production (incl. manufacturing and fabrication.) Stores, surplus & salvage, and purchasing followed. Several respondents indicated that other departments worked under the supervision or in conjunction with purchasing. Superintendent, machine shop, operating, receiving & shipping ran about 3% each. Material handling, raw stock, scrap department, and inspection followed. Numerous other departments received several mentions. Almost 15% said no department was particularly responsible, and 6% said the department generating the scrap was responsible.

③ Has any special campaign or program been initiated to increase the efficiency of scrap recovery ?

Yes —  47 %
No —  53 %

It is to be noted that many respondents, in answering "no," pointed out that efficient recovery of scrap has been a continuing program with them for several years. Others said scrap is disposed of as accumulated.

Chief results of programs reported were: better segregation and therefore better prices for scrap; more scrap recovered; cleaner plants; better cooperation from employees in getting out scrap; more reusable scrap recovered. Excellent results were indicated by a very large majority.

4 Has your company successfully altered production methods to conserve materials and cut down on the production of scrap ?

Yes _____ 61 %

No _____ 39 %

Here again many pointed out that this procedure is a continuing policy with them. Others said that difficulty in obtaining standard size raw material (e.g. steel sheets) ruled out trying to cut down on scrap. Excellent to fair results were achieved in the large majority of cases where these changes in production were possible.

5 Have you noticed any tendency to hesitate in scrapping old machine tools and other heavy equipment because of possible tool shortages ?

Yes _____ 54 %

No _____ 46 %

6 Is it your policy to dispose of all or a majority of scrap, as accumulated, through one or two established channels, or to sell it competitively ?

Established channels. _____ 74 %

Competitive _____ 26 %

Several said they use both. Others pointed out they use their own scrap. Attention was also called to the fact that OPS has established a ceiling price on scrap.

7 Do you find that the systematic collection and disposition of scrap materials helps, directly or indirectly, in procuring additional raw materials ?

Direct _____ 24 %

Indirect _____ 30 %

No _____ 46 %

WHAT THEY SAY

"Realize we are lax in this department. Will use this questionnaire as a memorandum to investigate our scrap disposal and attempt to handle it on a better basis."

"Present campaigns by industry to flush out scrap are vigorous only verbally and millions of tons are available were the efforts to secure it aimed in the right direction."

"Our management is reluctant to sell scrap when our product sales are at a high level, due to the present tax rates. We will dispose of our scrap in a year when our income is low."

"Careful collection of all types of scrap materials definitely helps us to obtain hard-to-get materials."

"There is plenty of scrap in the country if gathered by concerns who do not hoard it."

"Scrap collection and disposal is classed as unessential to production, so when the plant is under-manned the most important jobs take precedence, and naturally, the scrap collection can always be done at some future date, 'when we get the time'."

"We take special care that our scrap (especially tires) does not get into the hands of unscrupulous dealers who will partially repair and sell on the open market in an unsafe condition."

"Think the scrap situation should be emphasized more in small business, such as auto repair shops, etc., because they have a lot

lying around their places without realizing it."

"Bonus system established in our shearing department to promote most efficient use of odd size sheets of steel. This accounts for large reduction in steel scrap."

"If every business would cut down on its inventory and utilize every ounce of metal possible, this would save countless tons of steel per year."

"It takes time to train all employees on the importance of scrap materials. Only by constant repetition can it be accomplished."

"Through this ballot you have reminded us to watch the scrap situation more closely and to put in some controls."

"We pride ourselves—and have for some years—on maintaining a systematic and regular method of disposing of scrap. During normal times this is one of the best ways we know of for keeping our plant cleaned up. At present, it is of course a patriotic duty which we most heartily endorse."

"I don't think this is the answer. Let's get after the stock piles of raw material. Business is still going on as usual."

"We have always been extremely scrap (dollar!) conscious. No special campaign was needed. It has always had a direct bearing on procurement."

LOCKHEED'S BUYING

Keeps 'em Flying

FOR BETTER UNDERSTANDING

This story of Lockheed's buying—what it means to the company, to the wide industrial community of Lockheed suppliers, locally and nation-wide, and to the job of every individual employee—is part of a comprehensive and effective public relations job. Prepared as one article in a series under the general title "The Lockheed Story", it was distributed in May to more than 20,000 workers in the organization and to industrial and community leaders in the San Fernando Valley area where the Lockheed factories are located. A foreword by Vice President Cyril Chappellet points out the significance of the purchasing operation in providing the flow of materials that constitute "the very lifeblood of our company".

HOPPY HOPKINS used to have one of the plushiest jobs at Lockheed. Most of the year he worked around the little factory in Burbank. But every spring, just as the sun warmed up and the days began lengthening, Hoppy went north with the robins for two or three weeks of tramping around the great Pacific forests.

He got a lot of good natured ribbing from the men he worked with. "Pretty soft." "An extra vacation in the north woods." "All paid for, too." "Funny that you go north just as the salmon start running."

But Hoppy's real reason for the trip was to look over the new crop of Sitka spruce that came roaring down the rivers from the spring logging camps around Tacoma. During two or three weeks in the woods and around the sawmills he would pick out a couple of carloads of prime spruce fitches with straight grain and solid body, ship them south to California—and the year's buying of Lockheed's main material would be out of the way.

Of course the company needed some other stuff—engines, propellers, a few hinges and screws, glue, bolts, a little sheet metal, and some paint. But those things weren't much of a problem. When they needed a set of hinges, some one ran over to Story's hardware store in Burbank. And when they ran out of aluminum, a boy would take the pickup down to Los Angeles for a few sheets.

That's the way Lockheed, like thousands of other small shops

To the Men and Women of Lockheed:

Everyone has seen the pie-charts that companies publish to show what happens to their sales dollar. If Lockheed should publish such a chart, it would show two huge slices and a number of small slivers.

The biggest slice—50.2 cents of the dollar—goes to you in the form of wages and employee benefits. The next largest—47 cents—goes to outside companies that supply us with the services, parts, and materials we put together to make airplanes.

In past Lockheed Stories we have told you about the payroll slice and how it affects the economic life of the Valley. Now we want to talk about the other big slice, handled by our purchasing department.

Purchasing has spent over half a billion dollars since the war—averaging out to \$378,000 every working day—and the rate is going up rapidly as we step up our buying and subcontracting programs.

This flow of Lockheed purchasing dollars is a significant factor to other industry and your neighbors in the Valley and Southern California. And the returning flow of materials is the very lifeblood of our company. The story of that flow and of the steps we take to preserve it, is significant to all of us—and to the nation.

Cyril Chappellet
Vice President

across the nation, bought its parts and raw materials in the 1920s and early 1930s. It worked fairly well in the days when our factory resembled a small cabinet shop. The budget was too small to support fat stock bins, and a couple of planes every month was considered a tight schedule anyway.

But even with this small load there were times when the happy-go-lucky purchasing method show-

ed weakness. There was the evening back in 1931 when Harvey Christen, now director of inspection in Lockheed's Georgia Division, sat well past quitting time plowing through stacks of bills in the front office. Christen was combination office boy, night watchman, guide, stock clerk, shipping clerk, truck driver, errand boy, and some-time buyer, and his target for the night was to record the month's buying.



LOBBYISTS. Thousands of salesmen troop through the Lockheed purchasing department lobby each year on their way to talk with buyers about their companies and products that Lockheed can use.

"Look at this," he said, "a bill for 10 pounds of glue Jones bought from that paint shop down in Burbank—eight cents a pound higher than wholesale in L. A. And here's one where Johnson bought five-inch boots from Story's when he couldn't find three-inch.

"What this outfit needs is one man to buy everything for the whole factory. Why, I'll bet someday it will be a full-time job!"

Christen's prediction went begging for a while. But a couple of years later Ronald King, assistant treasurer of the newly organized Lockheed corporation, took over the factorywide buying job along with his other duties. He and his secretary became the Lockheed "purchasing department."

By mid-1937 when our new SuperElectra gave us three models in active production, seven people were working in the purchasing department. And when general purchasing agent Jack Wells came to Lockheed as a buyer in January, 1940, the department employed 24. During that year we pushed sales, including more than 300 Hudson bombers for the British, up to \$45 million, and the number of people in purchasing jumped to 122.

In 1941, as we built up our lines for P-38 Lightnings, B-17s, and Ventura bombers, the department grew rapidly to 200, 300, nearly 400. And at the 1943 war peak there were 1,050 people working six days a week buying the thousands of items we used to put out our 19,000 World War II planes in the air.

Today in Building 167, more than 360 Lockheed men and women are working to get the screws and rivets and sheet metal and typing paper and engines that keep our

assembly lines rolling and put muscles in the nation's defense.

Most of us are only vaguely aware of what goes on in that building. Maybe some of us think it houses a collection of shrewd characters, ex-horsetraders and used car buyers, whose one job it is to stretch the daylights out of a Lockheed dollar. Or we may think of it as a huge bear trap that snaps up requisitions and buries them under tons of red tape.

But this big gray office building across Empire Avenue from the B-1 canteen is the hub of a network of telephone and telegraph wires that spread over the entire nation—to Los Angeles and Boston, Toledo and Teterboro, Wisconsin and West Virginia, Burbank and Buttermilk Junction.

We keep the wires humming. "Hey, Joe. Send me 500 J-1030 gaskets." "Frank, where in blazes are those needle bearings? Well, get 'em on a plane." "Mr. Ajax? Can you raise that servo-motor

order by 250 and still make the delivery date?"

Last year they placed 113,560 orders—\$132 million worth of things we needed. To understand the financial importance of the department's work, compare this one year figure to the \$96 million cost of Hoover Dam. Or to the \$90 million spent in eight years on the Santa Ana, Ramona, Harbor, and Hollywood freeways. Or the \$110 million investment in the entire Los Angeles harbor facility.

The people in purchasing handled 168,154 requisitions, change orders, and other paper work in 1950. They wrote and answered many thousands of letters—10,000 within a few days after fighting broke out in Korea and let loose a flood of queries from hundreds of firms anxious to get a chunk of defense business. They interviewed as many as 185 salesmen a day, chose among thousands of competitive bids, checked thousands of factory setups, financial backgrounds, credit ratings, and vendors' supplies of manpower and material.

No More Hoppy Go Lucky

The picture of hundreds of people with desks piled high with work, telephones jangling, teletypes clacking, lobbies jammed with salesmen, bears faint resemblance to Hoppy Hopkins' leisurely once-a-year trips to the north woods, or to Ron King and his secretary who handled the job less than 20 years ago.

Maybe you're wondering why we ever dropped such catch-as-catch-can buying methods. Two decades ago an organized department to direct and control purchasing was a fairly new idea in American industry.

But as our first all-metal plane began attracting steady orders from all over the world in the mid-1930s,

A NEW SOURCE OF SUPPLY?

Letters by the thousands, from prospective vendors, flooded the purchasing department immediately after the Korean outbreak. Here they are getting careful consideration by service manager John Card, general purchasing agent Jack Wells, outside manufacturing manager Herb Caldwell, and purchasing manager William Ricke.





\$4,350 A MINUTE . . .

Since the Korean war boosted Lockheed's backlog of military orders, the role of purchasing has expanded with the speed of an A-bomb's atomic cloud. In one recent month alone, purchases amounted to \$46 million, which means that materials were being ordered at the rate of \$2,090,000 per day, \$261,000 per hour, \$4,350 per minute.

During 1950, some \$65 million was spent for supplies procured from 2,680 companies in the San Fernando Valley and Los Angeles area. It is estimated that the company's local purchases supported 20,000 families, equivalent to the combined population of Culver City, Beverly Hills, South Pasadena, Hermosa Beach, and San Fernando. The 1951 purchasing program approximately doubles this figure, with more than \$500,000 every working day flowing into local shops—a potent factor in the industrial growth of that area where 135 major aircraft parts suppliers and hundreds of smaller companies have developed within recent years.

life at Lockheed changed. No longer were we a little woodworking shop turning out planes for sportsmen, world adventurers, and record-setting aces.

The factory settled down to a steady hum. To assure ourselves a supply of materials, standard quality, and better prices from quantity orders that would enable us to meet the competition of the fine new Douglas and Boeing transports in the airline market, we had to centralize our buying and place it under strict control.

Hoppy's trips and the errand boy-buyer went the way of the horse and buggy and the glue-and-dowel airplane.

Not Just a Department

Today purchasing is more than a group of people, more than just a department. In fact, it is much more than just the job of buying the materials and supplies that keep

the Lockheed plants running.

Most of us realize that manufacturing, sales, or finance go beyond the people or the departments that are tagged with those names. The engineer who designs a seat for the Constellation is concerned with selling the plane. The workman who puts the trim in the cabin does a neat job, the riveter drills out and replaces clinched rivets, and the mechanic installs engines properly all because each wants the finished plane to be salable. In other words, sales is a basic company function that we are all concerned with. It is not just one department's job.

Purchasing is another such function. There are about 360 people, including just 114 actual buyers, whose jobs are tagged as "purchasing." But there are many others, from foreman on the assembly line to traffic and finance men, who are concerned with the

NEXT! Lockheed buyer Don Buehrig (left) divides his attention between a salesman at his desk and a vendor on the phone, while secretary Georgia Burman bears down with a handful of rush orders. At next desk, H. A. Brandt takes advantage of a brief lull to check market reports, and Hugh Harvey (right) works on a vendor's delivery problem.

basic job of keeping a steady flow of parts and materials coming into the Lockheed plants.

Purchasing Can't Do It Alone

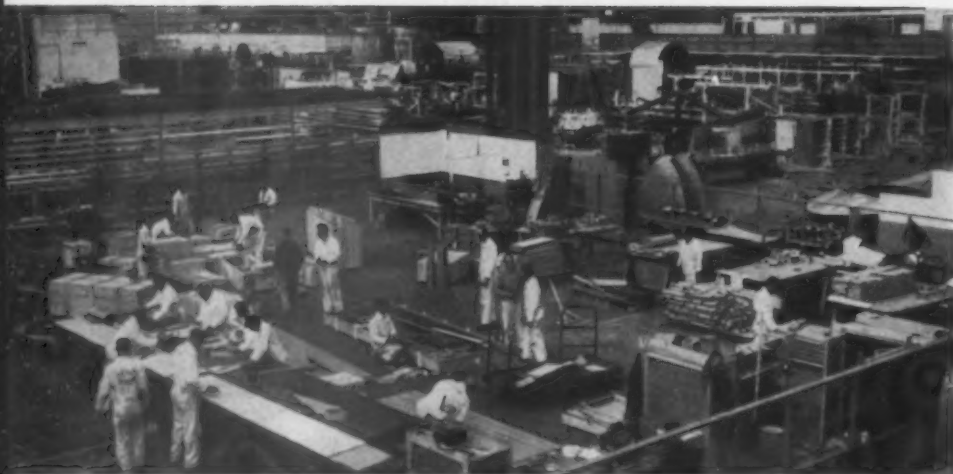
Of course, the purchasing department—we'll call it that for convenience although there are actually five departments that come under the heading—is the focal point of the function, just as the sales department centralizes companywide effort in that activity. But purchasing can't handle the supply job alone any more than sales could sell planes designed and built by people who didn't care if they were salesworthy.

Ten different departments help by keeping account of materials throughout the plant and letting purchasing know when stocks are low. Engineering and materiel planning help set up needs that reach far into the future. The traffic department plans shipping routes and schedules to bring in the supplies. Inspection checks everything for quality to make sure it is what we ordered when it reaches the receiving department. And a department called accounts payable finishes the purchasing job by sending checks to the vendors after inspection accepts the supplies.

All departments cooperate with purchasing in a constant program for more and more standardization of parts. And several such as engineering, inspection, and production departments help devise and test new or substitute products. Even the credit and financial departments help out. They check suppliers' financial dependability, and some of our vendors come in regularly for financial advice from Lockheed.

The purchasing department's main objective, or at least the one most of us associate with it, is to get the right materials from the right sources, in the right quantities and at the right prices, and to see that they are delivered to the right place at the right time.

The job starts with a need—occasionally something we want right away but usually something we will use weeks or months from now. When you draw rivets or sheet metal or typing paper or a



Tooling, plans, and materials are readied for shipment to outside companies under Lockheed's subcontracting program. The pressure is on purchasing to relieve the pressure on production.

small manufactured part from stock for your work, the group in charge of the material keeps track. When the supply drops, it sends a request to purchasing. There file clerks hunt up one of 350,000 cards with all the information about aircraft materials we have accumulated in years of buying, and send it with the requisition to a buyer who specializes in your supply problem.

Buyer Selects the Vendor

The buyer reads the card for names of all vendors we have bought your article from, amounts we bought, the vendors' prices, discounts for quantity orders, kinds and grades each sells, information about their plants and their ability to meet delivery dates, and any bad experiences we have had on quality, late shipments, and dozens of other things.

From this information and from his own knowledge of the material—the kind you need, various qualities, current prices, and the direction prices are going—he decides who to buy it from and writes out an order. Or he may ask several suppliers to bid on the order if he feels he should have new vendors or a new set of prices. He may buy all the order from one company or he may split it up among several, depending on the amount he needs and whether he wants to build up a larger list of suppliers he can depend on in the future.

Careful Checking—or Red Tape?

That's an oversimplified picture of how we buy most things at Lockheed. We've found it's the best way to handle the giant job. But

the apparent complication of double checks and paper controls, the matching of requisition against purchase order against receiving memo against vendor's invoice, gives rise to the "bear trap and red tape" school of opinion about the purchasing department held by people who have sweated out hot material shortages.

Actually, for a function as big as purchasing, the paper work is rather simple, and the department can come up with some pretty fast action in emergencies.

Take the case of a maintenance welder in department 39-02. Not long ago he had a special repair job to do and ran out of welding rod in the middle of it.

The purchasing department called a plant in the east that furnishes our special welding rod. It was having a small strike and had nothing to show but an overdue order. Within two hours of searching the country by telephone, our purchasing people had a shipment from another company on a Los Angeles-bound plane.

But the welder was unhappy. "Okay, so we'll have it tomorrow morning! But I can go right down to Western Auto, right now, and get all the rod I need to finish the job. Why can't my foreman go out and get a few sticks? This purchasing deal sounds like a lot of red tape to me."

Actually the rod he saw at Western Auto wasn't the right kind for the job. If it had been, purchasing would have bought it to fill the special rush order.

But aside from that, there are a number of important reasons why

we have one department to centralize and control all our buying—instead of having a thousand or so company officers, foremen, and managers as well as a couple of hundred stock clerks and storekeepers traipsing around Western Auto stores, five and dimes, steel mills, and war surplus lots.

A Complex Job

Lockheed's need for specialized products and high standard materials complicates the purchasing job. To be sure of exact grades and quality, our buyers must be thoroughly familiar with the products and able to talk shop with salesmen and vendors.

Just like the engineers who select the plastics we need and the inspectors who check its quality, our plastics buyer must be familiar with organic chemistry and its products. He keeps up to date on new compounds, knows the latest types of plasticizers and cements, understands core structures and the effect of thickness on tensile and compressive strength. With this background he can determine vendors' abilities and buy from those who can deliver the quality we need.

Lives depend on planes being well built, and dependability starts with expert selection of the stuff that goes into them.

Centralized buying by trained men gives us a much greater assurance of regular supply. Parts on order can't be built into finished planes. We must shop from coast to coast to find many of the materials we must have. Purchasing's knowledge of vendors, materials, and market trends makes the entire nation Lockheed's shopping center.

New Methods to Fit Defense Job

And in the face of growing shortages today, when placing orders is far easier than getting deliveries, we've turned to some new purchasing methods to get the things we need to fill our primary national defense task of keeping the planes rolling off our lines.

For one thing, our expediting program means that we have placed many orders with people who a few weeks or months ago were building washing machines or kitchen sinks. Our engineering practices may be completely strange to them. Some of their machines may need to be adapted or replaced. Their employees may not be skilled in aircraft methods.

Naturally these things mean extra problems for the vendor who is trying to get our orders to us on

We Help Break Bottlenecks

Purchasing has a *long range* job of keeping our machines busy and our lines supplied. That means selecting vendors today, in the crush of immediate needs, who have the experience and ability to keep them in business when we need them next year—or in the 1960s and '70s for the commercial and military planes we'll be building then.

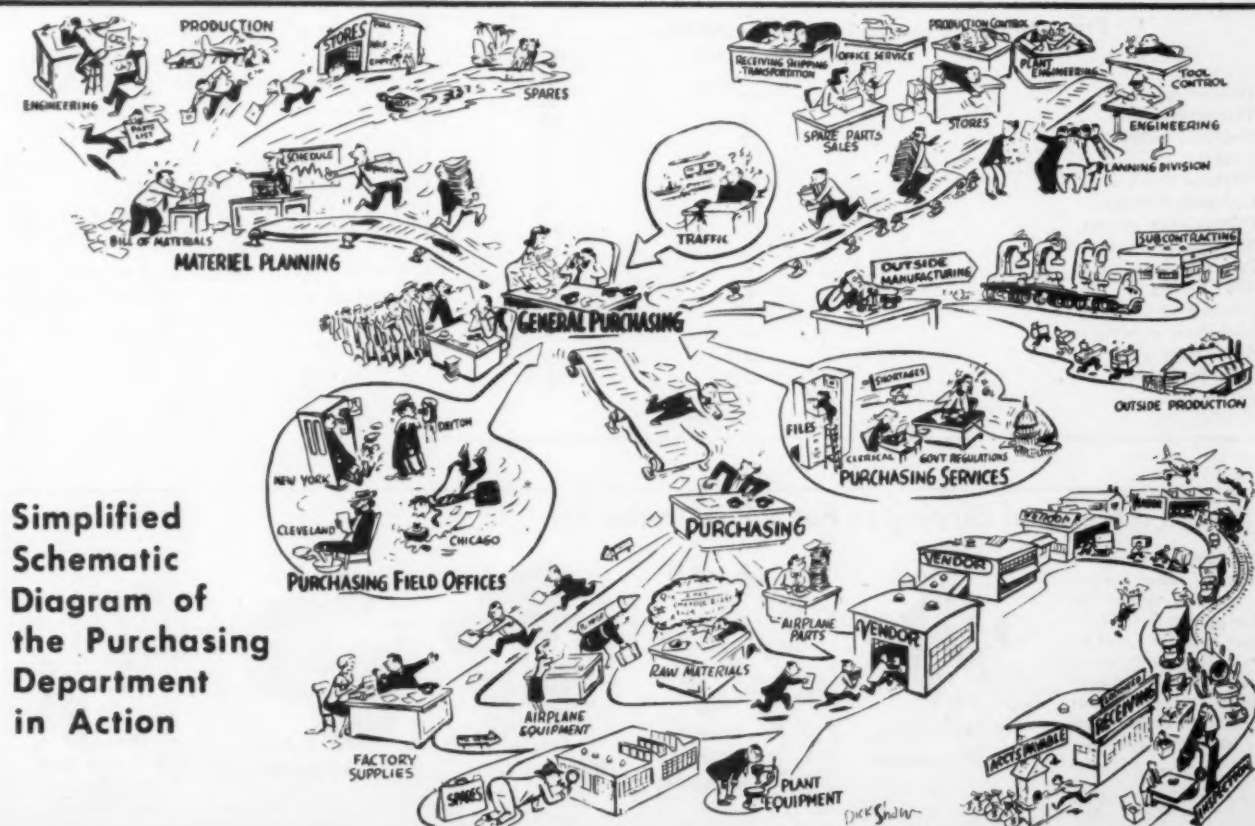
This help is not a fancy service we provide to keep inefficient companies in business—all our vendors are capable manufacturers in their own right. We simply recognize that we require a highly specialized product that is sometimes difficult to make in a standard plant, and that our buyers must tap our own reservoir of aircraft knowledge if the vendors are to avoid natural mistakes and costly delays.

We saw that if we were asked to expand our production for defense, our complicated planes with their need for more floor space, more machines, and more skilled workmen would jam our factories, overload our machines, and exhaust the community's manpower supply.

Subcontracting Aids Expansion

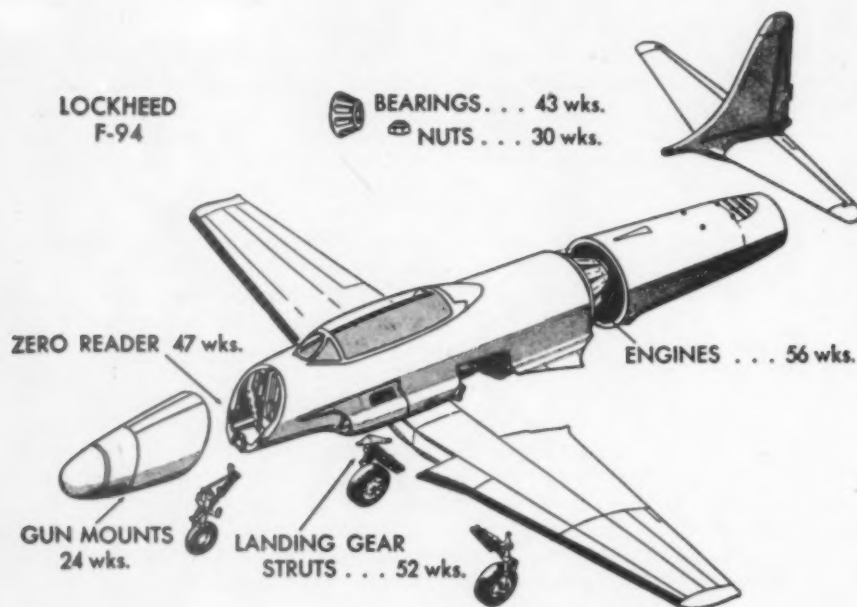
The subcontract unit of purchasing has hunted up plants to handle this work for us. They have ironed out thousands of engineering and production details, shipped thousands of tools from our plants—3,500 to one company and more than 4,000 to another. They have helped the subcontractors with manpower problems, turned over materials we had purchased to make the parts in our plants, and helped them run down sources of more supplies. They are still in the middle of a big job that has given our vital expansion program a king-sized boost.

Another part of purchasing, outside production, works like the safety valve on a big steam boiler. Occasional machine breakdowns or sudden production increases overload key points in our factories.



HERE'S WHY

purchasing for aircraft production has to be a long-range, far-sighted program. No miracles of production and assembly can cut delivery time on a finished plane to less than the longest procurement span required on component parts. Lockheed's deliveries on Air Force orders placed at the outbreak of the Korean War are now beginning, just 13 months after the orders were received. A glance at the lead time schedules indicates that this is a major purchasing achievement and gives a hint of what may be in store.



Procurement Time—A Year Ago and Now

	April, 1950 Weeks	April, 1951 Weeks
Tension regulators	17	30
Thermo blankets	6	22
Electrical switches	12	35
Gaskets	4	17
Hi-shear rivets	10	22
Hydraulic fittings	10	22
Phillips head screws	12	30
Aluminum forgings	12	30
Cotton and felt cloth	4	17
Alloy tubing	8	22
Stainless steel tubing	10	26
Aluminum welding rod	4	26
Monel wire	6	22
Radio batteries	1 1/2	17

When an assembly falls behind and threatens to stop the entire line, these people grab tools, materials, and blueprints, and ship the whole offending bottleneck to an outside company with the extra help, space, and machines to speed up its production.

The program works both ways. For example, North American recently gave us a hand with some rush tooling, and right now we're building some special plastic dies for Douglas.

Buying Time, Space, and Labor

All of us realize that we must have a steady flow of materials to build the planes the nation will depend upon. And purchasing's new role—the subcontracting and outside production that could be called the purchase of machine time, floor space, and skilled labor—may be a decisive weapon in the nation's production battle for peace. It is the means by which we can draw tiny shops in Downey, retired machinists in Azusa, and large plants like Beech in Wichita, into a giant defense effort.

Real Reason for Centralization

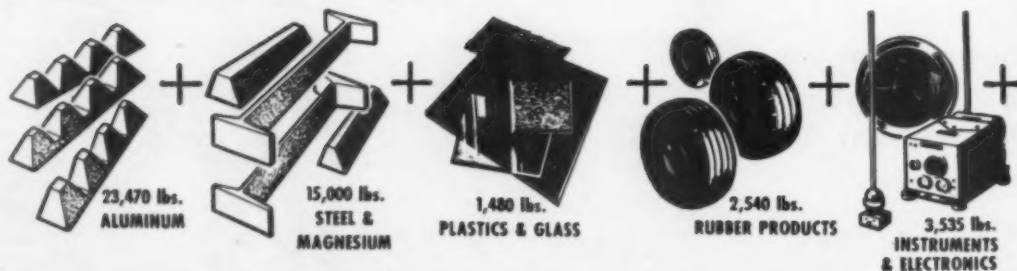
But perhaps the most important reason for centralizing our buying in the hands of experts is to save money—our own money, the money of our commercial customers, and the taxpayers' money turned over to us to produce the national defense weapons our country needs.

Some of the prices our trained buyers may obtain after much bargaining with salesmen may be only 2 or 3% under prices ordinarily quoted to occasional or inexperienced buyers. If you use only a few dollars' worth of material a year, a 2 or 3% overpayment doesn't matter much. With Lockheed buying millions of dollars in supplies each and every month, small percentages become important.

During 1949, for example, our buyers saved Lockheed close to \$2 million. By this we mean that

It Takes a Heap of Buying to Put a P2V in the Air

If you've ever worked a tough jig-saw puzzle, you can understand the job of putting a plane together — EXCEPT that to fully appreciate it, you'd have to buy the pieces separately from thousands of different stores. Like to try it? Here's our shopping list.



through skilled volume buying they paid that much less than our average long range costs for the materials they bought. And in the first 11 months of 1950, despite generally rising prices in the second half of the year, they saved another million or more.

In recent months, because of the urgency of some of our buying and a general price rise, our record of purchasing savings hasn't been so favorable. But the average prices we're paying for our things today are still far less than the national average of price increases.

Getting Our Money's Worth

The old adage, "A penny saved is a penny earned," still applies. Skilled buying can mean the difference between profit and bankruptcy for our company, between getting our money's worth on our huge military expenditures and waste on such a widespread scale that it could weaken our whole economy and strength to defend ourselves.

Lockheed's purchasing department has a full share in the production battle that is gripping the world today—the battle that may turn into one of men and guns if we lose the opening struggle in our factories. We can lose this battle in two ways—by bogging down in shortages and confusion, or by exhausting our economy while we build armed strength.

Almost all industry is expanding rapidly and making greater and greater demands on the nation's raw materials. Delivery time on almost everything we use has stretched out month by month until today we must figure our needs and place orders far in the future.

Some 55 basic materials including steel, aluminum, rubber, zinc, cadmium, copper, rayon, and even hog bristles are so scarce the government has placed limitation orders on their use. Special national defense priorities called "DOs" that you have read about help for both



GRIST FOR THE MILL. Tons of material pour into Lockheed's receiving area daily as vendors rush supplies by air, mail, pickup and giant trailer trucks—each shipment the result of carefully planned and coordinated procurement to meet production schedules.

military and commercial airline planes—but usually they fall far short of solving purchasing's problems.

We're fighting our procurement battle under conditions that are toughening each day. We face the job of feeding an increasingly hungry assembly line from a rapidly shrinking pantry of supplies.

It would be fairly simple to go to gray markets for materials at premium costs, or write escalator contracts that allow manufacturers to raise prices almost at will. But knowing that taxpayers ultimately foot the bills, we insist that suppliers turn in competitive bids and deliver goods at agreed prices.

Difference Shows in Your Taxes

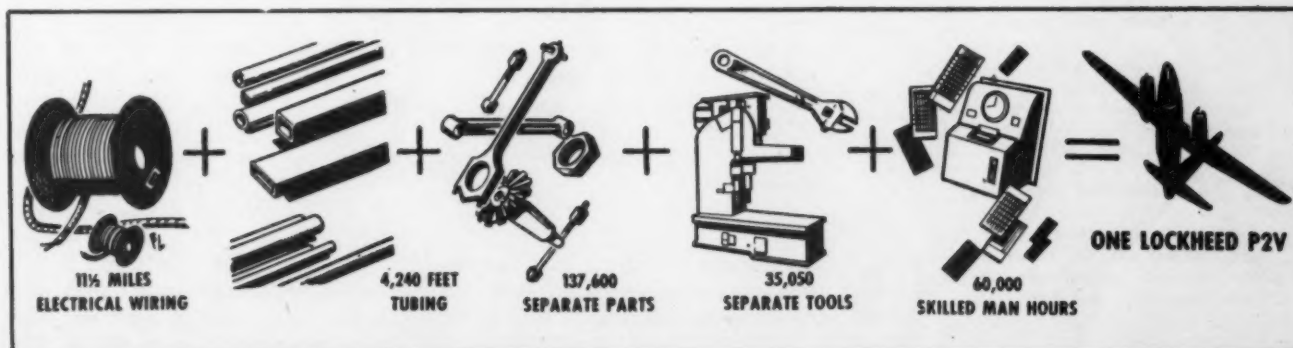
The difference in the cost of P2Vs and F-94s will show up in your income tax bill next March.

Maybe—after reading about the tens and hundreds of millions of

dollars we spend on supplies and services—you've got the feeling that we have materials to burn. But don't overlook the fact that we turn out airplanes each year worth millions and millions. We keep careful track of the materials we use, our inventories and stockrooms, and buy just enough for our needs.

Waste at any level—from planning to riveting—upsets our calculations and boosts costs—and taxes.

The jobs of every one of us at Lockheed have gained new importance with the defense task we have undertaken. And each of us, the engineer who works out a new or substitute product, the planner who gives purchasing a few extra weeks of time to handle a future need, or the man on the assembly line who saves a hard-to-buy part from the scrap pile, gives purchasing a hand in the battle to build up our national security without impoverishing the nation.



EXPEDITE!

● By Eugene S. Page, Director of Purchase, Great Lakes Carbon Corp., Chicago

THIS is the day of the Expediter. During World War II, the job of obtaining deliveries of urgently needed materials became an important and highly specialized phase of the purchasing responsibility. To order the goods was only half the story. They must be delivered—on time! The same situation is with us again today.

USING THE TIME-TABLE FOR EXPEDITING

Example: Deliveries are required to start 2 weeks from date of purchase order. (Col. 3)

2 days after order date

If vendor's acknowledgment is received by return mail (48 hrs.)—no expediting action required. If not, contact vendor at once in person or by wire to get assurance that the order is accepted, this acceptance to be confirmed promptly in writing.

2 days after acknowledgment

If vendor's acknowledgment includes satisfactory promise of delivery, or if such promise is received within 48 hours—no expediting action required. If not, contact vendor as above to obtain definite promise and written confirmation.

1 week after promise

Contact vendor by mail or other method to confirm promise and obtain assurance that delivery will be made as promised.

2 weeks after order date

If delivery has not been made as promised, contact vendor in person or by wire to check current status of order, and repeat daily until delivery is made.

Expediting is definitely a part of the procurement function. Where does it fit into the over-all picture of purchasing? Basically, our function has four parts:

- A. Initiation for purchase.
- B. Purchase.
 - 1. Negotiation.
 - 2. Selection.
 - 3. Commitment.
 - 4. Completion.
 - a. Delivery.
 - b. Performance.
- C. Receipt.
- D. Approval for payment.

The area for expediting covers this sequence from B-2, when the purchase commitment is made with the supplier, through C, when a satisfactory delivery has been made, all within the purchasing cycle.

Five Steps in Expediting

Is the work of expediting only a fight against time? Certainly not. The work of the expeditor who is aggressive and thorough is essential in *completing the buying function* of the purchasing department. But this implies that the effectiveness of his work depends on the foundation of a proper buying agreement.

On all orders and contracts which are classified as "important" or which have an "urgency" for delivery or completion to meet the requirements of a production schedule, he will seek to obtain and determine:

a clear "meeting of the minds" and complete agreement on every point between buyer and seller; an adequate schedule, definitely established, to meet buyer's requirements; conformance with the schedule; and satisfactory delivery or completion, according to the terms of the order or contract.

It follows, then, that there are

five steps in the expediting function of procurement:

1. **ACKNOWLEDGMENT.** Expedite to obtain acknowledgment by the seller that he has received by telephone, mail, wire, or personal delivery the purchase order or contract.

2. **ACCEPTANCE.** Follow for formal acceptance in writing, by an authorized representative of the seller, of all terms, conditions, specifications, and prices of the buyer's purchase order or contract. Such acceptance must be clearly stated and must *not* be on a letterhead or "form" of the seller which contains any conditions relating to the sale, which might be in conflict with the buyer's conditions. Any "exceptions", typewritten or printed, in the seller's written acceptance require further negotiation by the buyer (not the expeditor) until complete agreement on all points, in writing, by both parties, is obtained.

3. **PROMISE.** Expedite to obtain from the seller a specific promise of shipment or delivery of materials, or completion of services, within the time schedule required by the buyer. It is important that this be a promise given *after* (or *with*) formal acceptance of the order by the seller. A promise made *before* the order was placed is a thing of the past—it must be renewed!

Similarly, any promise becomes "old" before long. Lack of contrary information after a time has elapsed is a negative assumption that things are on schedule. Keep your seller's promises up to date!

4. **PERFORMANCE.** Of course, follow to see that schedules are maintained, that materials are shipped and delivered, and that services are performed and completed as previously agreed. This

TIME SCHEDULE FOR EXPEDITING ACTION

All oral statements are to be confirmed in writing within 24 hours.	ACTION				
	To Meet Requirements at Plant or in the Field which dictate that Material Shipments Be Made, or Services Begin:-				
	1.	2.	3.	4.	5.
PURPOSE OF ACTION	AT ONCE, RUSH	1 WEEK FROM TODAY	2 WEEKS FROM TODAY	1 MONTH FROM TODAY	MORE THAN 1 MONTH FROM TODAY
To obtain ACKNOWLEDGMENT and ACCEPTANCE of new Purchase Order or Contract	Act Now! Contact Vendor by personal call, wire, or Tel.	Act Now! Contact Vendor by personal call, wire, or Tel.	Allow no more than 2 days. If not received within that time - follow column 2.	Allow no more than 4 days. If not received within that time - follow column 2.	Allow no more than 7 days. If not received within that time - follow column 2.
To obtain definite PROMISE of shipment, delivery, or performance on a new Purchase Order or Contract	Act Now! Contact Vendor by personal call, wire, or Tel.	Act Now! Contact Vendor by personal call, wire, or Tel.	Allow no more than 2 days beyond the maximum for ACKNOWLEDGMENT and ACCEPTANCE. If definite and acceptable PROMISE not received within that time - follow column 2.		
To check current status of PROMISE of shipment, delivery, or performance, previously given.	Contact Vendor every day by personal call, wire, or tel. until shipment, delivery, or performance complete. No Promise over 1 Day old.	Contact Vendor TODAY, by personal call, wire, or Tel. Also, contact Vendor 2 Days before scheduled date. Beginning on scheduled date follow Column 1. No Promise over 5 Days old.	Contact Vendor TODAY, by mail or other methods. Then follow Columns 2 and 1. No Promise over 1 Week old.	Contact Vendor TODAY, by mail or other methods. Then follow Columns 3, 2, and 1. No Promise over 2 Weeks old.	Contact Vendor at least once every 2 Weeks, by mail or other methods, until schedule is 1 Month from Today. Then follow Columns 4, 3, 2, and 1. No Promise over 2 Weeks old.
To obtain certificate of satisfactory RECEIPT or COMPLETION	In every case Receiving Report, or other document, certifying satisfactory RECEIPT or COMPLETION should be received by the Expediter, from Plant or Field, within 3 days after that scheduled. If not received within this time, request by mail or other methods. If not received within 1 week, contact Plant or Field by personal call, wire, or Tel.				

may entail progress reports or check-ups based on seller's production cycle and schedules, lest the order drift to the point where completion on schedule becomes impossible.

5. RECEIPT OR COMPLETION. Expedite your own plant to obtain promptly signed receiving reports certifying receipt of materials or completion of services in good order and as specified by the buyer in the purchase order or contract. The work of the purchasing department and the expeditor is not finished until satisfactory delivery or completion is known and certified.

The point to be emphasized is that expediting is a continuous function in each instance. It begins when the buyer's commitment is made, and does not stop until acceptable fulfillment.

This does not mean, however,

that there is to be every-day contact between expeditor and seller. Here is an important place for the use of good judgment in allowing just sufficient lapses of time between checks on schedules and requests for the renewal of promises. The principles to be applied in determining the appropriate action and expediting schedule are tabulated in the accompanying "Time Schedule for Expediting Action", which indicates the purpose of action at successive stages of the procurement cycle and the type of action to be instituted at each stage.

Expediting Records

To complete his work in good order, the expeditor will

- a. post and record, and
- b. report

the progress and results of his action, so that the buyer and all others

concerned with an order may be kept fully informed.

All data on each purchase order or contract which receives full expediting treatment must be kept up to date in good chronological order—available instantly. Posting the status of all orders and contracts to a summary sheet, sometimes called a Material Status Report, is often desirable, especially with groups of purchases relating to a single plant or project. This record can serve as one part of a weekly or monthly report to management.

Work closely with the expeditor, and give him a hand whenever you can. His responsibilities are a vital part of the procurement function and the results he gets are essential to the fulfillment of the actions initiated by the buyer. Altogether, he contributes much toward keeping the wheels of progress and industry rolling.

Moving materials quicker—higher—cheaper

Handling Materials to Serve Quadrupled Production Program

By Frank G. Swain

Plant Manager
The Dobeckmun Company, Cleveland, Ohio

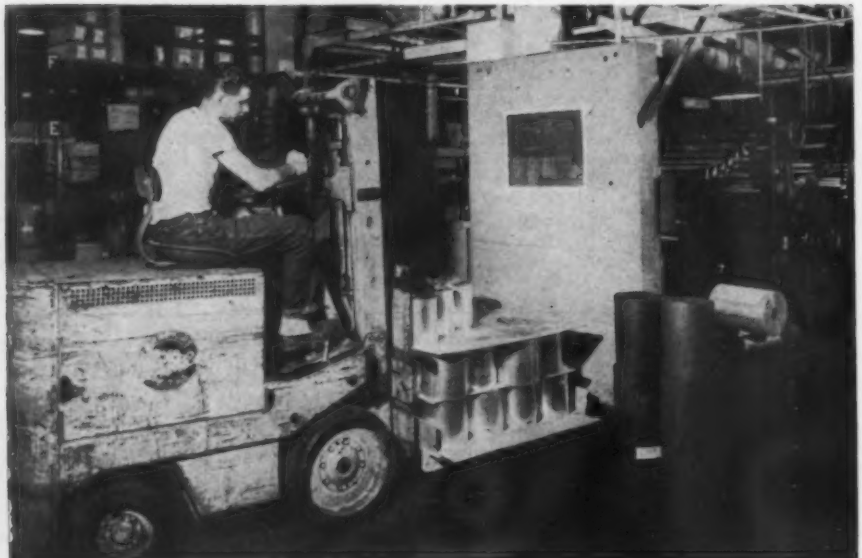
*Photographs by courtesy of the Baker Industrial Truck
Division, The Baker-Raulang Co., Cleveland, Ohio.*



Three transfer road trucks move raw materials to the plant from the warehouse, three miles away.



Incoming raw material is delivered to production storage, in pallet loads tiered three and four high.



Material is brought to the machines in manufacturing departments from production storage, as needed.

OF all the multiple problems that face a plant manager in his hectic career, I'd say that one of the least troublesome for me has been that of "material handling. When you consider that in recent years our volume has increased about 400%, it's almost unbelievable that we haven't made one addition to our handling labor staff nor have we made a change in the basic handling technique.

These results have been made

possible by the careful development of a handling method having sufficient flexibility to cope with the expansion as it developed. A large part of this handling system had to be started from "scratch" because prior to its installation incoming raw materials and outgoing finished goods were handled manually. Another problem which had to be met during the development of the system was how to provide adequate storage for raw materials and fin-

ished products with a minimum demand on the limited availability of floor space. That these problems, as well as those that arose during the subsequent expansion, were well met is attested by the fact that the only increase in material handling equipment has been the addition of two electric fork trucks . . . and, the future need for these additions had been foreseen and provided for during the planning of the system.

From a material handling stand-

point, The Dobeckmun Company's plant problems are unique and challenging, due to the complex nature of our business.

We work with aluminum foil, specialty papers, cloths and fabrics, cellophane, Pliofilm and other plastic films, and our operations include printing, laminating, sheeting, slitting and bag fabrication.

We produce a variety of progressive new packaging materials, for such fields as foods, drugs, textiles, candy, notions and novelty, heavy industry, automotive, and electrical, among others. We produce Zip-Tape, the familiar package opener used on cigarettes and gum. Another recent development is the world's first non-tarnishing metallic yarn, now setting precedents in the fabric and fashion world. In addition, we manufacture plastic glass substitutes for farm and construction use, electrical tapes, fine cover

than six months. Other equipment used within the plant includes a stationary powered belt conveyor, gravity roller conveyors, and a number of hand trucks. Closely integrated with the intra-plant equipment are three highway carriers which deliver raw material from the company's warehouse to the plant. In the warehouse 2 gas-powered fork trucks are employed.

By acquiring less expensive outside storage facilities, greater utilization was made of valuable plant space for productive equipment. Only 4800 square feet of space is devoted within the plant to storage purposes. Incidentally, the 30,000 square feet of leased warehouse space costs 5 cents per square foot whereas the cost of building equivalent space at the plant would be 10 dollars per square foot.

All raw material, other than thinners, bonding agents and similar

trucks, and deliver them to storage, where they are tiered three high. When the material is needed for production it is delivered to the plant by the company's three semi-trailer highway trucks.

At the plant the palletized material is unloaded with the aid of a 3000-pound capacity electric fork truck and is delivered directly to production storage, where it is placed on pallet racks or stacked at an angle to the aisles. Although oblique stacking requires slightly more floor space than right-angle stacking, this method is used because aisle space is saved and less time is needed to tier and remove loads. This time factor in delivering raw material to production is especially important at Dobeckmun because very little floor space is available alongside the machines for stocking the material. Equally important, of course, is that with the fork truck-pallet method it is now possible to store from two or three times more material in useable storage space than was formerly possible.

The rolls of paper, foil, plastic film, and cloth which are scheduled for the printing or laminating departments are removed as needed from production storage and delivered by the 3000-pound capacity fork truck. From these departments, the rolls are transferred to the slitting department for trimming, slitting or cutting. After this operation the material is transported on hand trucks to the wrapping department where it is packed into

(Please turn to page 310)



Cartons of finished products are transferred from conveyor to pallets for removal to shipping storage.

and box papers, and countless custom-laminated materials for industrial use.

When our production activity began spiralling after the end of the war, we decided to resolve our handling problems into their inter-plant and intra-plant phases. Three electric trucks transport all of the material to and from the production and shipping storage areas. The first of these, installed as part of the new system, paid for itself in less

inflammable liquids which are stored outdoors at the plant site, is received at the warehouse, located about three miles from the plant. This material is made up into unit loads weighing from 1200 to 2200 pounds on 42 x 36-inch double-faced wood pallets. Some of the incoming material, such as foil, is shipped by the suppliers in unit loads or disposable pallets. The fork trucks remove the palletized loads from the boxcars, or highway

The same equipment used in bringing raw materials to production handles end products awaiting shipment.



Preparation for Purchasing

By Frank S. Williams

The information in this article was developed by the author as part of an M. B. A. thesis at The Ohio State University. It is based on a survey of the personal experience records of 220 industrial purchasing agents in the state of Ohio, all of whom are members of the National Association of Purchasing Agents. The companies represented in this study cover a broad diversity of manufacturing industries, including both large and small organizations. The median group, most typical of the situations reported, represents companies having about 350 employees, with a purchasing department of four persons engaged full time in purchasing activities, and with annual purchases ranging from one to five million dollars.

EDUCATIONAL BACKGROUND IS IMPORTANT.

TODAY'S PURCHASING DEMANDS HIGHER TRAINING

COLLEGE GRADUATES IN PURCHASING CLASSIFIED BY AGE GROUPS

Age Group	College Graduates	Non-Graduates
24-34	56%	44%
35-45	47%	53%
46-56	27%	73%
57-67	23%	77%
68 and over	none	100%

The notably higher percentage of college graduates among the younger age groups of purchasing men clearly reflects the increasing tendency on the part of management to seek men with college training as a prerequisite for undertaking the purchasing responsibility. One veteran buyer whose formal education ended at the high school level commented: "When I entered purchasing, college training was not considered as essential as it now is. My feeling is that college training would be most helpful, as well as a few months in the plant and storeroom."

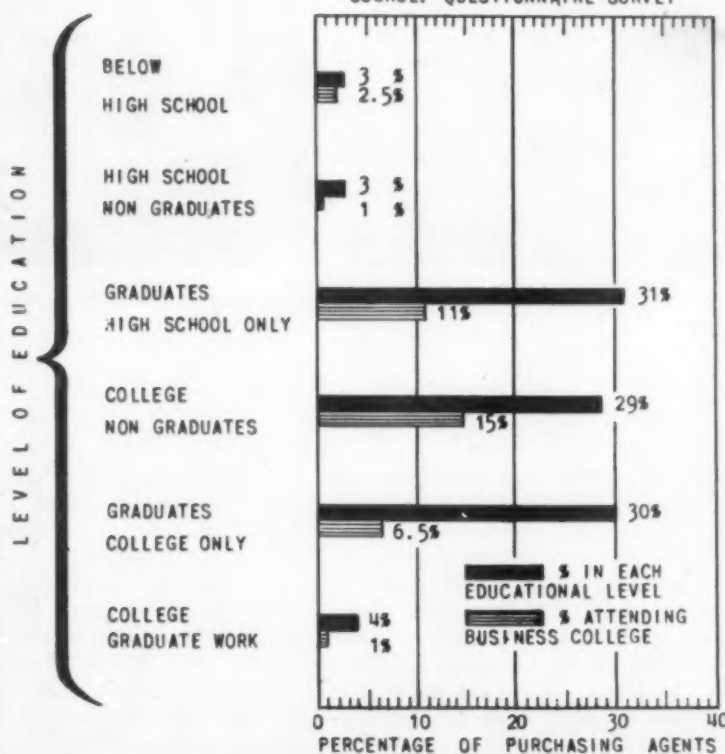
In this representative group of purchasing agents, 94% are high school graduates, 63% have had college training, and 34% are college graduates; 4% pursued their college work at the graduate level, earning advanced degrees in law (5), engineering (2), and psychology (1); 37% have supplemented their education by attendance at business colleges, more than half of these acquiring two or more years of business college training.

PERCENTAGE ANALYSIS OF PURCHASING AGENTS BY LEVELS OF EDUCATION

and

PERCENTAGE IN EACH EDUCATIONAL LEVEL ATTENDING BUSINESS COLLEGE

SOURCE: QUESTIONNAIRE SURVEY



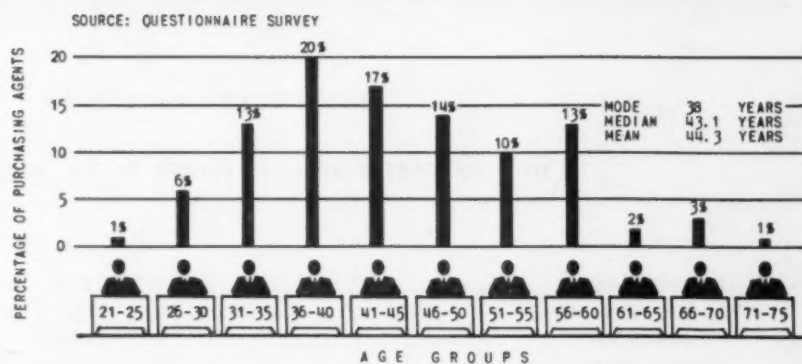
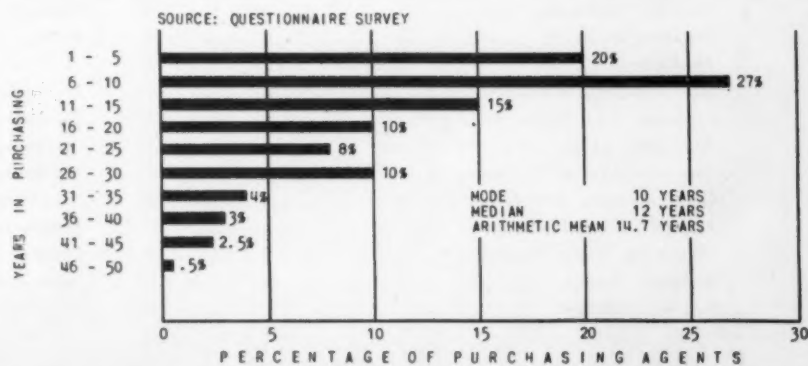
MAJOR FIELDS OF STUDY REPORTED BY COLLEGE TRAINED PURCHASING AGENTS

Major Fields of Study	Minor Fields of Study	Courses Most Frequently Reported	Courses Considered Most Essential for Purchasing Work
Engineering (41)	Accounting (10)	Accounting (61)	Accounting (58)
Business	Business	Economics (40)	Business Law (51)
Administration (35)	Administration (10)	Business Law (37)	Economics (39)
Accounting (15)	Economics (10)	English (34)	General
Economics (9)	Engineering (7)	Chemistry (20)	Engineering (37)
Law (9)	English (6)	Mathematics (20)	English (36)
Liberal Arts (5)	Political Science (6)	Marketing (14)	Purchasing (26)
Chemistry (3)	Psychology (6)	Political Science (16)	Mathematics (25)
Marketing (3)	Mathematics (5)	Engineering	Chemistry (22)
Metallurgy (3)	Chemistry (4)	Drawing (11)	Marketing (21)
Political Science (3)	Physics (3)	Physics (11)	Psychology (19)
		Transportation (11)	Public Speaking (16)

Additional subjects receiving more than one mention as being desirable in preparation for purchasing work are: General Business (13), Salesmanship (11), Metals and Metallurgy (8), Engineering Drawing and Blue Print Reading (7), Business and Industrial Management (7), Physics (7), Personnel (6), Science (5), Traffic (5), Ethics and Religion (4), Finance, Money and Banking (4), Statistics (4), Contracts (3), Office Management (3), Political Science (3), Advertising (2).

Purchasing agents in this survey were asked to indicate whether any special technical knowledge was required for their job; 38% replied in the affirmative. Predominant in this group was the requirement of engineering training—electrical, civil, mechanical, industrial, or chemical—29%. Chemistry was listed as essential by 4%; metallurgy, 3%; law, 2%. One company reports: "We employ only graduate engineers for responsible positions in purchasing."

BUSINESS EXPERIENCE FOR PURCHASING RESPONSIBILITY

THE REPRESENTATIVE P.A.
IS NO BEGINNERMORE THAN HALF OF
THESE PURCHASING AGENTS
REPORT MORE THAN
TEN YEARS EXPERIENCE
IN PURCHASING WORK

MANY PATHS LEAD TO PURCHASING POSITIONS

Position Held Prior to Appointment as Purchasing Agent	Second Prior Position Most Frequently Held	Experience In Fields Other than Purchasing
Assistant Purchasing Agent (48)	Buyer (17)	Sales (47)
Salesman (23)	Chief, Inventory Control (11)	Accounting (41)
Buyer (18)	Salesman (11)	Industrial Management (26)
Accountant or Auditor (13)	Accountant or Auditor (10)	Engineering (25)
Clerk (8)	Sales Manager (10)	Transportation and Traffic (10)
Office Manager (7)	Assistant Purchasing Agent (8)	Law (9)
Production Manager (6)	Shipping and Receiving Clerk (6)	Finance (7)
Expediter (5)	Expediter (5)	Agriculture (5)
Plant Superintendent (5)	Foreman (4)	Advertising (4)
Shipping and Receiving Clerk (5)	Cost Clerk (3)	Office Management (4)
Storekeeper (4)	Production Control Clerk (3)	Chemical (3)
Traffic Manager (4)		Construction (3)
		Education (3)
		Marketing (3)
		Personnel Management (3)

Only 6% of the companies represented in this survey provide special training for their purchasing personnel, other than the usual on-the-job training. Many of the companies, however, require that purchasing personnel spend an indoctrination period in the plant or stockroom to acquaint them with products and methods. Of the organizations that provide training after employment, four have a junior executive training program in which purchasing agents participate.

One company offers an evening course in purchasing, and six others send their purchasing personnel to local colleges and universities for purchasing courses. A considerable number of the purchasing agents have taken advantage of such courses on their own account, and frequent reference is made to the educational programs sponsored by the local Purchasing Agents Associations.

TITLES AND REWARDS.

MANY TITLES — ONE RESPONSIBILITY

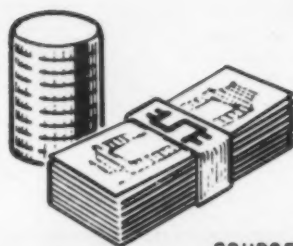
TITLE OF CHIEF PURCHASING OFFICER IN 220 INDUSTRIAL ORGANIZATIONS

Purchasing Agent	135	Buyer	1
Director of Purchases	26	Director of Purchasing and Planning	1
Purchasing Agent and Treasurer	5	Executive Purchasing Agent	1
Manager of Purchasing	5	Executive Secretary and Purchasing Agent	1
General Manager and Purchasing Agent	4	Manager, Procurement Division	1
General Purchasing Agent	4	Manager, Purchasing and Traffic	1
Secretary-Treasurer	3	Manager, Sales and Purchases	1
President	3	Plant Procurement Supervisor	1
Vice President, Purchases	3	Production Manager and Purchasing Agent	1
Executive Vice President	2	Purchasing Agent and Personnel Manager	1
Purchasing Agent and Traffic Manager	2	Purchasing Agent and Assistant Treasurer	1
Superintendent of Purchasing	2	Purchasing and Sales Engineer	1
Office Manager and Purchasing Agent	2	Superintendent and Purchasing Agent	1
Assistant General Manager	2	Secretary-Assistant Treasurer	1
Purchasing Stores Supervisor	2	Supplies Superintendent	1
Assistant Manager	2	Supervisor of Materials	1
Business Manager	1	Vice President-General Manager	1

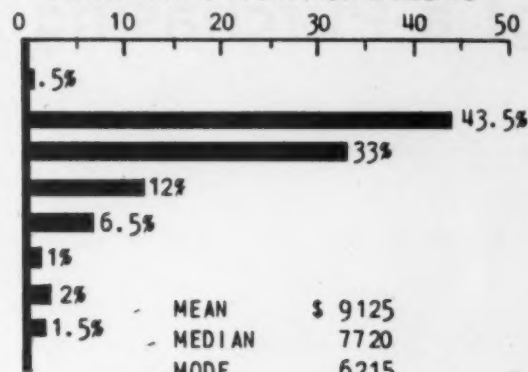
SALARIES OF 200 PURCHASING AGENTS

SALARY (DOLLARS PER YEAR)

PERCENTAGE OF PURCHASING AGENTS



\$ 2,999	AND UNDER
3,000	TO 6,999
7,000	TO 10,999
11,000	TO 14,999
15,000	TO 19,999
20,000	TO 24,999
25,000	TO 29,999
30,000	AND OVER



MEAN \$ 9125
MEDIAN 7720
MODE 6215

SOURCE: QUESTIONNAIRE SURVEY

PURCHASING'S PLACE IN THE ORGANIZATION

TITLE OF THE PURCHASING AGENT'S IMMEDIATE SUPERIOR OFFICER, TO WHOM HE REPORTS

President	81
General Manager	36
Vice President	27
Plant or Factory Manager	15
Vice President-General Manager	6
Secretary-Treasurer	5
Works Manager	5
Treasurer	5
Director of Purchasing and Production	5
Director of Purchases	4
Vice President-Manufacturing	3
General Superintendent	3
Assistant Treasurer	2
Administrator	2
Operations Manager	2
Director of Finance	2
Superintendent of Supplies	2
Assistant Manager	1
Assistant Secretary	1
Assistant Secretary-Treasurer	1
Chief Engineer	1
Chief, Purchasing Division	1
Division Manager	1
Divisional Purchasing Agent	1
General Purchasing Agent	1
Office Manager	1
Procurement Manager	1
Secretary	1
Service Director	1
Superintendent and Sales Manager	1
Vice President in Charge of Operations	1
Vice President in Charge of Production	1

SALARIES OF 200 PURCHASING AGENTS

There is no significant correlation between purchasing agents' salaries and the size of company or annual volume of purchases. Analysis according to length of service in purchasing is misleading since it does not take into account the length or character of service in other capacities.

Only one of the 200 purchasing agents participating in this survey is in the salary bracket of under \$3,000. He is a college graduate, on his first job, with a small concern employing 50 people in total. Of the three who receive more than \$30,000 per year, none are college graduates; one, aged 30, has the title of general manager and purchasing agent; one, aged 46, is a part owner of the business. Among those receiving \$15,000 or more per year, 85% have a title such as director of purchases, manager of purchases, vice president of purchases; 15% have the title of purchasing agent.

An analysis of salary ranges according to age groups and college training appears in the accompanying table.

DOES EDUCATION PAY?

Salary Analysis of 200 Industrial Purchasing Positions
Classified According to Age Groups and College Training

		Annual Salary			
		Under \$7,000	\$7,000 to \$10,999	\$11,000 to \$14,999	\$15,000 and over
68 College Graduates		38%	38%	14%	10%
By Age Groups					
24-34		73%	21%	6%	none
35-45		40%	43%	10%	7%
46-56		none	53%	27%	20%
57-67		17%	17%	33%	33%
68 and over		none	none	none	none
132 Non-Graduates		49%	29%	10%	12%
By Age Groups					
24-34		80%	20%	none	none
35-45		63%	23%	9%	5%
46-56		33%	43%	8%	16%
57-67		20%	30%	25%	25%
68 and over		33%	none	33%	33%
200 Purchasing Agents (College Graduates and Non-graduates)		44%	33%	12%	11%

A Day in the Life of a Purchasing Agent

Photographer David Markstein trails Purchasing Agent Fred E. Lind of Louisiana Coca-Cola Bottling Co., Ltd., New Orleans, on the busy round of duties "from 9 to 5".



◀ **9:11 a.m.** Coat off and ready to go, Lind begins day by going through the correspondence brought in by his secretary, Miss Adele Triay, dictating answers to the morning's mail before the normal interruptions of the purchasing job present their demands upon his schedule.



10:38 a.m. Less than an hour after the need has been brought to his attention, Lind signs the purchase order for speedy delivery of the new part. All purchases, even those of an emergency nature, are covered by a purchase order. In special cases, a hurry-up order is placed by phone, and confirming purchase order is issued later.



◀ **9:48 a.m.** A new parts requisition prompts a trip downstairs for consultation with Plant Superintendent A. E. Christen. Lind believes in knowing what he is buying, and why, and makes it a point to be intimately familiar with every detail of plant equipment and operations. He gets complete cooperation because his associates in all departments know that he is working to help them. As opportunity offers, he also visits the plants from whom he buys, gets acquainted with their men, learns what their problems are, how his orders are handled, and how to work better together, gains first-hand knowledge of just what each firm is equipped to do for him.



12:08 p.m. Lunch time, and Lind is off for a meeting of the Rotary Club. He is an active member of Rotary, the Chamber of Commerce, and the New Orleans Purchasing Agents Association. He believes that the P. A. should be civic minded, enjoys the contacts and takes on a full share of Association work, finds that it broadens his outlook and helps the public relations aspect of his work. He loses no opportunity to sell the idea that Coca-Cola is a good outfit to do business with. "It's easy to become known as a good firm when you're selling," he says. "The payoff to public relations comes when you're buying."

◀ **10:15 a.m.** Back at the office, Lind consults Conover-Mast Purchasing Directory, finds out who can supply the parts that Superintendent Christen requires.





1:17 p.m. Back from lunch. Receptionist phones to say that District Sales Manager Robert J. Scott of Bond Crown & Cork Company is in the lobby to see him. "Send him in," says Lind. He makes it a point to receive all salesmen promptly, make them welcome, hear their story—in short, to treat them as he hopes his own company's salesmen are received by their customers.



1:30 p.m. "Now, about our latest order . . .," says Lind. The interview gets down to brass tacks, and Scott helps work out a knotty problem involving scarcities and schedules. Lind regards the salesmen who call on him as "assistant purchasing agents", encourages their suggestions about products, methods, and services, that will make his own company's operations more efficient.



2:12 p.m. A conference with Office Manager K. S. Duhon, on the setting up of a capital investment account. Lind finds his training in accounting of vast help in performing his duties as P. A. He started with Coca-Cola 23 years ago as assistant office manager, now holds the office of secretary-treasurer in addition to his purchasing responsibilities.



2:53 p.m. Receptionist calls to say that another salesman is waiting, just after Lind has received word that he is needed in the receiving department. Getting the salesman on the phone, Lind explains that he is tied up for the afternoon, makes an appointment for a call-back at 10 o'clock the following morning, when there will be time for a more satisfactory interview.



3:19 p.m. Lind looks over damaged crate in a shipment of store display signs just being unloaded, and gets the necessary information for negotiating an adjustment. His concept of the purchasing job does not end with issuing the order, but includes a follow-through to insure that a satisfactory delivery is made to the requisitioning department.



4:35 p.m. Lind files away cards of salesmen he has talked with during the day. An alphabetical file keeps him informed on who handles his accounts as well as what companies have the goods he might need, thus helping him to personalize his buying. Odds and ends are cleared away before closing time. He will start the new day with a clean desk.

Factors in Specifying

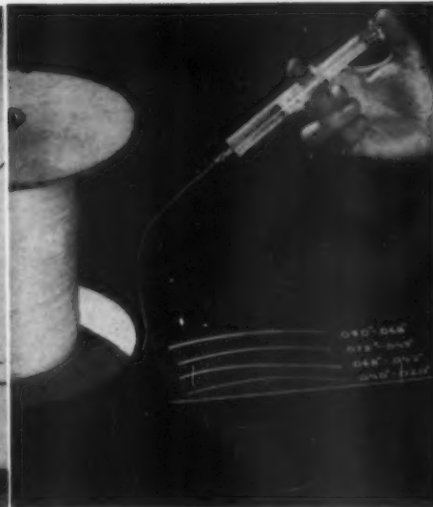
• By R. A. Fisch, Anchor Plastics Company, New York



Optical clarity of Lucite adds beauty to these engraved perfume stands, fabricated from heavy hexagonal tube.



Curve-extruded ring and sleeve of Aero-flex provide insulation and safe mounting for TV tubes and other lenses.



Inert, non-toxic sterile tubing for medical use is one of the few extruded items carried regularly in stock.

THERMOPLASTIC EXTRUCTIONS, although relatively new, are more and more being employed as original components—not substitutes—in a wide variety of applications where their properties make them better suited or more economical than other materials. Some substitution taking the place of scarce metals is also being done, but to a limited extent only, as thermoplastic materials themselves are not too plentiful and because in many cases they are not suitable as substitutes.

This article is concerned with the factors involved when specifying a component to be made of extruded thermoplastic. It is essentially a check list of properties required in the intended application, to give the buyer some guide lines and principles which he should follow when thinking of these materials and their use. The accompanying table and abstracts give an over-all picture of the basic materials and their

properties. It should be borne in mind, however, that most of these materials are available in different degrees of hardness, and the values given should be interpreted only as the mean.

Certain general questions have to be answered by the buyer at the outset. The resulting "use specification" should then be submitted by the buyer to the extruder, who is in a position to recommend or select the best material, formula, and flow to fit the required properties, based on the property tables and his experience with the various thermoplastic materials.

Properties Required

Mechanical Requirements. Does it have to be rigid or flexible? If rigid, should it be very hard or rather soft? Will it have to be machined, punched, drilled, or otherwise handled? Will it be subject to compression, tension, impact, or abrasion during its usage? If so, to

what extent and for what periods? Is it used in long sections? How long? Is the part to be supported, or self-supporting, or does it have to support a load? Are any inserts or other materials mechanically connected to it? How?

Example: Under normal room conditions, an acetate strip 0.060" thick is rigid, but can be cold formed to a 90° angle; it can be punched. On the other hand, a styrene shape of the same dimensions will not bend to a 90° angle, but will hold up better in an unsupported section due to its better cold flow properties; it cannot be punched, being too brittle.

Electrical Requirements. Is the component used as an insulator? What voltage? Is it subject to occasional arcing? Is there a problem of corona formation? Creepage? Is high frequency involved?

Example: For a hypothetical rigid extruded part of a cross-

THERMOPLASTIC EXTRUSIONS

BASIC CHARACTERISTICS OF THERMOPLASTIC MATERIALS



Extruded plastic webbing adds color, sturdiness, and comfort in modern furniture design.

section less than 3/16", in a 24v DC application, butyrate would do well. The same part requiring low loss and highest insulation value in a HF application would be made of styrene. A flexible part for the latter application would indicate the use of polyethylene.

Chemical Requirements. Is the extrusion exposed to weak acids or alkalis, or strong acids or alkalis? If so, what concentration, for how long, or continuously? Is it used in products coming in contact with oils or organic solvents? Does it have to be inert biologically, or non-reactive to what atmospheres?

Example: Tubing for mineral oil could be made from butyrate, for tomato juice from transparent acrylic, and for hydrofluoric acid from polythene. None of the materials could be interchanged advantageously with the others

ETHOCEL[▲] (Ethyl Cellulose)

Toughest of the cellulose it is also lightest. Ethocel is rigid with considerable springiness. Chipproof, weather resistant, it retains stability at low temperatures, high humidity and withstands heavy abuse. Finish is dull compared with other cellulose. Special formulations can be compounded.

▲ trade name of Dow Chemical Co.

ACETATE (Cellulose Acetate)

An economical general purpose material with good mechanical properties. Can be designed in thin sections, resists oil, gasoline and cleaning fluids. Not recommended for outdoor applications. From rigid to elastomeric, acetate is odorless, tasteless and easily cleaned.

TENITE II[▲] (Cellulose acetate butyrate)

Most characteristics same as acetate although chemically different. Tenite II is lighter, has greater resistance to distortion under heat and humidity, is more suitable for outdoor use due to lower water absorption. Rigid but not brittle. It is available in various degrees of hardness, all colors and crystal clear.

▲ trade name of Tennessee Eastman Corp.

FORTICEL[▲] (Cellulose Propionate)

Newest of the commercial cellulose, it has the lowest water absorption, dependable dimensional stability, fine electrical properties, and shock resistance. Forticel is not affected by many inks and cleaning compounds. Has high gloss, is rigid and is at present available in opaque colors.

▲ trade name of Celanese Corp. of America.

LUCITE[▲] (Acrylic resin)

Well known for beauty and clarity. Light-transmission comparable to optical glass—is one-third as heavy and shatter resistant. Weather resistance unsurpassed by any other transparent plastic... higher heat and scratch resistance, greater rigidity than cellulose. Also available in all translucent and opaque colors.

▲ trade name of E. I. du Pont de Nemours & Co., Inc.

STYRENE (Polystyrene)

Low cost and crystal clear, practically no cold flow and low specific gravity. Electrical properties comparable to polyethylene. Material is rigid, but brittle and design of thin sections should be avoided (below 0.01"). Extremely low water absorption. Heat and sunlight resistant grades are available.

AEROFLEX[▲] (Polyethylene)

Is flexible, chemically and physiologically inert. Has no known solvent at room temperatures. Contains no plasticizer, is tasteless, odorless and non-toxic. Outstanding electrical properties over wide frequency and temperature range. So light it floats. Practically zero moisture absorption. Remains flexible below embrittlement point of other plastics.

▲ trade name of Anchor Plastics Co.

NYLON (Polyamide resins)

Various compositions cover different physical property ranges. Nylon is tough at temperatures as low as -70°F, form stable up to 400°F. Has fairly high water absorption but this actually increases impact strength. Is light weight, has low coefficient of friction and very high tensile strength for a flexible material.

BONAR[▲]

An Anchor development to meet the need for a strong material with unusual flexural strength. Structure consists of a multitude of fibers embedded in a plastic base. Can be sewn over without breaking. Resistant to dry-cleaning, washing, and salt water.

▲ trade name of Anchor Plastics Co. (pat. pend.)

properties	ETHOCEL ^(R) (Ethyl Cellulose)	ACETATE (Tenite I, DOWE-N)	TENITE II ^(R) (203-MH) Cellulose acetate butyrate	FORTICEL ^(R) (20182) Cellulose propionate	LUCITE ^(R) (M8 129) Acrylic Resin	STYRENE (Styron 444) Polystyrene	AEROFLEX Polyethylene	NYLON (N66501) Polyamide Resin
Specific gravity	1.10	1.22	1.22	1.20	1.18	1.06	0.92	1.13
Tensile strength, psi 77°F	5000	6100	5000	5000	9000	6500	1300	7400
Modulus of elasticity, psi 77°F	3.0	1.2	1.2	1.4	0.5	0.45	did not break	> 16
Rockwell hardness 77°F	M17	R115	R106	R93	M98	M73	D45 (shore)	R83
Distortion under heat °F, load 48 psi	158 □	189	182	147 □	179	175	107	124
Volume resistivity in OHM-cm	10 ¹³	10 ¹¹	10 ¹¹	10 ¹¹	> 10 ¹³	10 ¹²	> 10 ¹³	5 x 10 ¹³
Dielectric strength - volts/mil	400	356	379	425	400	400	440	420
Water absorption - 24 hrs immersion %	1.2	3.0	1.5	1.5	0.4	0.04	0.01	2.0
Flammability - in/min	1.0	0.9	1.15	1.5	1.5	1.0	1.1	self ext.
Effect of sunlight	slight if stabilized	slight	slight	slight	very slight	slight yellowing	slight	slight discoloring
Effect of acids	slightly affected by weak acids—decomposed by strong acids	slightly affected by weak acids—decomposed by strong acids	slightly affected by weak acids—decomposed by strong acids	slightly affected by weak acids—decomposed by strong acids	practically none	attacked by strong oxidizing acids	none	attacked by strong acids
Effect of alkalis	weak; none strong; slight	slightly affected by weak alkalis—decomposed by strong alkalis	slightly affected by weak alkalis—decomposed by strong alkalis	slightly affected by weak alkalis—decomposed by strong alkalis	practically none	none	none	weak; none
Effect of organic solvents	widely soluble	soluble in ketones and esters. Softened or slightly soluble in alcohol. Little affected by hydrocarbons.	soluble in ketones and esters. Softened or slightly soluble in alcohol. Little affected by hydrocarbons.	soluble in ketones and esters. Softened or slightly soluble in alcohol. Little affected by hydrocarbons.	dissolves in esters and aromatic hydrocarbons	dissolves in chlorinated and aromatic hydrocarbons	none (under 122°F)	resistant to common solvents
Clarity	translucent to opaque	transparent to opaque	transparent to opaque	opaque only	transparent 90% light transmission	transparent 89% light transmission	translucent to opaque	translucent to opaque

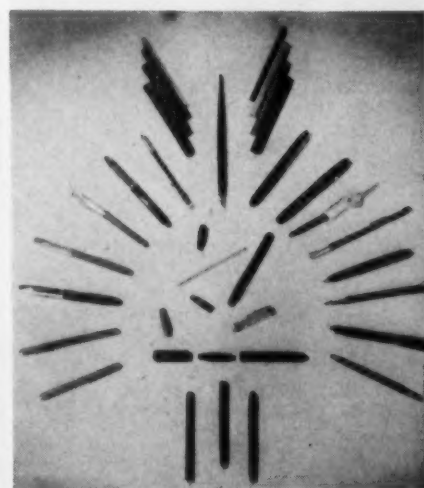
Colors: Any color and shade available

□ 244 psi

in these several applications. **Finish and Optical Requirements.** Does the extrusion have to be transparent, translucent, or opaque? What color or shade is desired? Is phosphorescence, fluorescence, or the ability to pipe light necessary?

Example: Almost all materials can be had in all of the specifications for color and transparency, but Lucite and styrene would be the best materials for optical applications. Ethocel would have a matte surface without special treatment; it can also be made glossy. Nylon and polythene are not available in crystal clear, but are translucent only.

Temperature Requirements. Compo-



Barrels for pens and mechanical pencils are economically fabricated from extruded tubing.

In the author's company, the basic factors enumerated in this article have been incorporated in a comprehensive Request for Quotation form which is furnished to customers. Reverse side carries a check list questionnaire covering properties required. Specific details are requested as to end use of the proposed component, and submission of samples, models, or drawings is invited.

nents will be exposed to $-^{\circ}\text{F}$ for what period? Momentarily? Continuously? Is the extruded part actually in contact with a $-^{\circ}\text{F}$ hot part, or merely adjacent? What are the low temperature requirements?

Example: This is a very critical factor, since none of the thermoplastics listed will, in general, withstand temperatures above 175° F except Nylon and certain special formulations of styrene and Lu-

cite. It is possible, however, to boil a 0.040" O.D.—0.020" I.D. tube of polythene (220° F) if it is not subjected to any stress whatsoever.

Miscellaneous Requirements. Is the part immersed in water? Does it come in contact with water? Is it exposed to high humidity? For what periods is it used, outdoors, in sunlight, or indoors?

These factors, of course, depend on the application. Generally speaking, it is not advisable to specify a cross section having a heavy section abruptly ending in a thin one, as it is usually difficult to keep the shape from warping due to the difference in cooling time. In drawing up specifications for a thermoplastic extrusion it should also be kept in mind that tolerances are, in almost all cases, much broader than those for metal parts. In the majority of cases, the extremely close tolerances of metals are not required, due to the comparative ductility and plasticity of the thermoplastics.

Example: Commercial tolerances on a $\frac{1}{2}$ " O. D. tube are generally $\pm .005$ ", although, if necessary, a precision of $\pm .003$ " can be achieved. In a 0.040" O.D. tube, tolerances of $\pm .001$ " are in order, while on a 1" O. D. tube $\pm .010$ " is generally specified. In the rare cases where anything closer is a "must", centerless grinding

will do the job with tolerances of $\pm .0015''$.

Investments for extrusion dies are in most cases negligible and sometimes non-existent. Die costs for tubing and rods are customarily waived, and the charge for shapes is usually less than \$100. Consequently, extrusion does not require immensely large quantities to make it an economical process. For commercial runs, quantities usually range from 500 lbs. minimum. On a 9/32" round rod, 8" long, in acetate, this would amount roughly to about 20,000 pieces. Quantities can be expressed in pounds, or by the number of pieces, or by total length in running feet. Extrusions can be supplied in coils or on spools, or cut to length.

Example: Assuming that a quantity of only 2000 pieces of the above specification were required, as compared to the commercial minimum run of 10 times that amount, the price would be relatively high. However, it may still be much lower than the cost of making the part by machining, particularly if, say, a groove was desired running along the axis of the rod. Extruding the rod would definitely be lower in cost than making it by injection molding, due to the injection mold cost. Comparative costs and quantities can readily be calculated in each particular case.

Cored extrusions combine the structural properties of wood, metal and fibers with the color and finish of plastics.

Specialty manufacturers have found many useful applications for extruded shapes.

Extruded interlocking channels of Tenite play an important role in the assembly of partitions and structural units.



This Business of Buying

By Stuart F. Heinritz

Address at the purchasing seminars conducted by the University of California, Los Angeles and Berkeley, April 27 and 28, 1951.

QUITE a few years ago, I had a conversation with a prominent and successful purchasing man who happened to have come into this business of buying by way of the sales department of his company. He knew, from personal experience, what it meant to operate on both sides of the purchasing desk. One of the comments he made, in discussing this experience, was this:

"Buying and selling are pretty much alike, but there is one important difference. When a salesman goes out to call on a prospect, he may or may not make a sale. The law of averages is against him, on any particular call, because there may be nine other salesmen out after the same account, and only one of them will get the order. So he adjusts his philosophy and his plan of campaign to that law of averages. If he fails to convince one prospect, there's another one just around the corner. If one item in his line doesn't sell, he reaches down into his sample case and comes up with another item that will. If he doesn't make his quota today, there's always tomorrow. But when the purchasing agent is handed a requisition for something that is needed in the plant, he has no such leeway. Something else won't do. Tomorrow will be too late. When the purchasing agent goes out to buy, he has to get the goods."

Because the odds were so heavily against the salesman, and because it was easy to measure his accomplishments in terms of dollars and cents, it is perfectly natural and proper that generous recognition should be given to those talents of salesmanship that enable a man to secure more than the average share of orders.

At the same time, because 100% performance in procurement was expected and taken for granted, and because—in those dear, dead days of plenty and of competition—this procurement could be accomplished by the simple process of selection from among the offerings which eager and energetic salesmen brought to the purchasing office, it was equally natural that scant attention should be given to the qualifications of buymanship. The belief became firmly rooted in business philosophy that "Anybody can buy."

It is not my purpose to challenge this thesis. We all know men of widely differing personalities and differing talents who have been notably successful in the purchasing field; there is no standard pattern. We all know men who have been tossed into positions of purchasing responsibility without specific preparation. Examples such as these tend to support the contention that "Anybody can buy." But the

significant part of their achievement does not lie in the personal accomplishment. It is that they have made buymanship a science instead of merely a job, shown the way and set the standards by which "Anybody can buy."

Make no mistake about it: something new has been added. The basic requirement of 100% procurement performance still stands before. But it is no longer enough.

Management is looking to its purchasing departments for *high quality performance* to conserve dollars and secure greater value.

Management is looking for *creative performance*, to improve products and to broaden markets.

Management is looking for *executive performance* that makes a constructive contribution to company policies and profits.

Leadership in purchasing has given a practical demonstration that competent purchasing is able to cope with its responsibilities despite the great and grave new problems. Every new accomplishment adds a little to the definition of what management logically can and should expect of anybody worthy to be entrusted with the purchasing function. And every such enlargement adds a new qualification to the concept of competence in purchasing. It is to these qualifications that we must turn our attention.

Let's start with a simple one.

1. Anybody Can Buy—IF

he knows where to get the goods. The days are long past when industry could afford to depend on the casual and incomplete knowledge of supply sources that comes unsolicited to the attention of the purchasing office. Under that sys-

tem, even in times of plenty and competition, there was never any assurance that the source selected represented the best value or the most favorable purchase. The competent purchasing agent is not content to sit passively waiting for the

supplier to come to him. He is an active searcher for the things his company needs.

To do this intelligently, he must know materials and products, that he may know what he is seeking. That's quite an order in itself,

when the purchasing list embraces hundreds of different items in a wide range of categories. But on the major items, at least, it is a responsibility that cannot be shirked.

He must know not only where and by whom they are made, but how they are made, that he may understand the supplier's costs and problems of manufacture.

He must know not only how they are normally made, but how they *can be made*, for when the normal and obvious sources are not available for his orders—a situation that is becoming disturbingly frequent in these troubled times, for a variety of reasons—then the manufacturer with comparable equipment and skills that could be adapted to the required production becomes a potential source for otherwise unavailable products.

I was much impressed by an unusual catalog that came to my desk recently. Only three pages of this 32-page booklet are devoted to showing the company's standard product line of metal furniture and cabinets; 90% of the presentation is devoted to a detailed, illustrated listing of the company's equipment and what it is capable of doing. Each description includes a statement of capacity and precision ranges. You will recognize this, of course, as a bid for subcontract work, a hedge against the day when limitation orders may curtail or ban production of the standard line. But it is exactly keyed to the purchasing

agent's requirements in his search for sources of supply—even though he may not be looking for furniture and cabinets.

Not all companies are so far-sighted, or so accommodating. Therefore the far-sighted, competent purchasing agent makes it a practice to gather such information on his own account. If the salesman does not come to him, he goes to the supplier. He visits the plants of supplier industries to get the information at first hand. He does not wait for an emergency to carry that program into effect. If and when an emergency comes, it is more than likely that he will be far too busy to undertake such a search, but he will be prepared.

This development of supply sources is a vital part of purchasing activity even without the compelling necessity of wartime shortages and dislocations. It may be prompted by geographical factors.

The development of West Coast industries provides an excellent example. It is well known that large consuming plants tend to become a nucleus for the development of supplier industries, but that doesn't simply happen as a result of natural economic law. It is more likely to be the result of intelligent and determined purchasing policy.

As recently as five years ago, the great bulk of production parts to supply West Coast aviation and automotive industries were brought in from established suppliers in the

east and middle west, transported across the width of a continent. In February, 1947, the Purchasing Director of Ford Motor Company announced his intention of purchasing \$50 million worth of production parts annually from West Coast manufacturers, for his assembly plants in that area. In a year and a half of intensive effort, he was able to spend only \$27 million in the area. Then, with the education of suppliers as to his needs, and with the development of additional facilities at his encouragement, the purchasing program began to pay off. The quota was reached and exceeded as the local producers became competent and truly competitive. Besides the added convenience and elimination of the long rail haul, the reduction of in-transit inventory alone represents a handsome saving, and the whole metalworking industry of the area is a beneficiary.

Similar developments are now in process in southern areas which have also been importers of needed products from the older industrial sections of the country. Those campaigns are spearheaded, not by producers nor by Chambers of Commerce, but by intelligent and hard working groups of purchasing agents seeking to better their buying position as well as to build up the economic area of which they are a part. So does competent purchasing change the industrial geography of the nation.

2. Anybody Can Buy—IF

he knows how and why the things he buys are used in his own company's plant. This is what gives meaning to a purchase. Without that knowledge, he is an automaton and his whole buying activity is a routine chore. But if he takes the trouble to inquire into the purpose of a particular purchase, his job comes alive. He buys with a purpose, and the whole wealth of resources that are available to him through his contact with the specialized knowledge, technical counsel, and comprehensive experience

of supplier organizations is channeled to the benefit of his company.

During the last war, a new phrase came into the business vocabulary. We were schooled to think in terms of the "end product". Our whole program of war production and controls—the building of facilities, allocation of materials, and priority of projects—were geared to the principle that it's the end result that counts. That principle is just as sound and just as important in the regular, continu-

ing conduct of any business at any time.

The accelerated pace of industrial research gives special importance to this phase of buying today. We live in a world of new materials, new processes, new equipment, with properties and capacities undreamed of only a few short years ago. All of this means new choice and new opportunity for the buyer. The magnificent achievements of the laboratory await translation to profitable end use by the buyer who knows what end result he is seeking.

3. Anybody Can Buy—IF

he knows how to judge value. This is peculiarly the province of the purchasing agent—to balance utility against cost. We need not dwell here on the obvious and elementary

phases of the buyer's cost responsibility such as exploring the markets and getting competitive bids. The trouble is that in too many cases, where just anybody is buying, the

process stops there. Your real purchasing agent has discovered that a far greater cost-saving opportunity exists in prior analysis of the things he is asking the vendors to make

for him. Time after time, he finds that the price is right, but the part or product itself is needlessly expensive.

We depend on our technical men and designers to engineer quality and satisfaction into our products and specifications. Then it is the turn of the purchasing agent to engineer needless cost out of the product, working with the engineers to eliminate the unnecessary elements, the extra manufacturing operations, the excessively close precision, the non-standard formulas and dimensions, the special features that do not contribute to value or are disproportionate in cost. Then, and only then, can he be sure that he is

buying right, and the savings are basic, permanent, repetitive.

It is impossible even to conjecture the amount of waste that exists in purchasing through specifying the wrong quality, or the wrong design, or the wrong method of production—too good, too poor, too elaborate, too special, or too carelessly adapted to the ultimate job to be done. We do know, from the results that have been achieved through organized programs of value analysis, that this waste runs into millions of dollars a year—purchase dollars thrown out the window. And we have only scratched the surface.

In large companies like Ford, General Electric, and Westing-

house, the savings have been so fantastic that they would be unbelievable if we didn't have the figures to prove them. Cost reductions of 30% to 70% on individual purchased parts are commonplace, without ever asking a supplier to sharpen his pencil. But it is not a technique for the large company alone. The purchasing agent of a medium sized southern company reports savings of \$118,000 in the first year after he started applying the principles of value analysis—more than twice the entire cost of the purchasing operation. And the principle is simply this: competent purchasing, whether for the giant corporation or in the one-man department.

4. Anybody Can Buy—IF

he is able to interpret economic forces and recognize economic trends. An otherwise good purchase, made at the wrong time, may turn out to be the worst possible purchase. The proper timing of a purchase calls for informed judgment before the purchase is made, as to the probable conditions of sup-

ply, demand, and price at the time when the goods are to be delivered and when they are to be used.

One of the business barometers most closely watched today is industry's inventory position. It is important to the general business picture; it is even more important

to the business health of the individual company. Inventories that are either too large or too small can be a crippling hazard to any enterprise. And inventory position is essentially a reflection of purchasing policy. The buyer-by-hunch is taking an uncalculated risk for his company.

5. Anybody Can Buy—IF

he knows the legal responsibilities that are involved in every purchase. In our increasingly complex economy, even without the added regulations of a defense program, the simple transactions of purchase and sale are hedged about with all sorts of legal requirements. You can get into trouble by paying too little or too much, or by purchasing more

than your allowable quota, or by neglecting to see that your supplier has conformed with the regulations governing rates of pay and conditions of work in the production of the goods you buy. You may find yourself in possession of "hot goods" that you are unable to use, or subject to unforeseen taxes that must be added to purchase cost. In the new interpretation of the law,

the buyer is held equally responsible with the seller.

So the buyer must know the rules, and learn to live with the regulations. If he does this well, he will find the regulations an aid in getting a full share of the materials to which he is entitled. If he does not, he and his company will be constantly in trouble, and will not get their share.

6. Anybody Can Buy—IF

he knows how to get along with people. With all the mechanics of purchasing science and the rigid pattern of official regulations, buying remains a very personal sort of job. It is carried on by conference, correspondence, interview, and negotiation, all aimed at arriving at a meeting of minds. Given identical conditions so far as the objective, impersonal factors of a transaction are concerned, two different personalities may arrive at widely different results. The ability to deal with people may spell the difference between a mediocre and a superlative purchasing accomplishment.

Reams have been written on the subject of purchasing-sales relationships, and on the public relations aspects of purchasing conduct. These points cannot be overemphasized. Of equal importance is the ability to get along with people in one's own organization, for purchasing deals with all. Purchasing policies, value analysis programs, introduction of new products, revision of specifications, advance notice of requirements, acceptance and quality control tests, conformance with procedural regulations—all must be effected by working through other individuals and other

departments. Many a good purchase, many a purchasing program, has been sabotaged in the receiving room or at the machine, or stymied at another desk, or dissipated in inertia.

No purchasing agent ever did the complete job of which he was capable without the confidence and cooperation of his associates in manufacturing and engineering departments. Ineptitude in human relationships may stand between the competence to do a job and the opportunity to translate the potential into actual performance that would inspire recognition.

7. Anybody Can Buy—IF

he knows how to administer a staff and a program. Purchasing is an operation involving infinite detail. The purchasing man must be director of both a function and a department. As the size of his operation and of the department grows,

the administrative responsibilities increase. All good buyers do not make good administrators. But the men who get to the top in this field, who direct industry's largest buying programs, and contribute most effectively to their companies' suc-

cess, necessarily leave the detail of actual buying duties behind as they climb up the ladder. Administrative capacity, coupled with the know-how of the purchasing function, becomes the big essential for progress.

8. Anybody Can Buy—IF

he recognizes his responsibility to the organization as a whole. He must coordinate his particular purchasing function with the company objectives of progressive and profitable operation, utilizing the special knowledge and facilities of his position to make a constructive contribution to over-all management policy. And purchasing has much to contribute.

The modern business organization is a complex unit, made up of

many parts but still a unit. The measure of executive stature is not to build a separate little departmental empire, with strong defenses against encroachments upon cherished prerogatives, but to earn a position of respect and helpfulness in management councils.

The eight points enumerated do not by any means exhaust the list of qualifications that are embodied in today's definition of buymanship, but they are enough to establish the

fact that this business of buying embraces a lot more than negotiating a deal. The competent purchasing agent must also be, in part, a researcher, a cost analyst, an economist, a lawyer, a diplomat, an administrator, a business man, and a human being.

Perhaps we can summarize, and put it into the form of a less appalling responsibility by citing one more qualification that will show how all this can be achieved.

9. Anybody Can Buy—IF

he is willing to learn and use the purchasing tools that are available to him. The principles, techniques, and information sources cited above have all been covered in the literature of purchasing, for everyone to study and adapt to his particular situation.

It is uniquely characteristic of purchasing that the leaders in this

field are not only willing, but eager to share their knowledge and experience.

Purchasing is a self-made professional science, and education is the keynote. Its members are keenly aware that the profession can advance only as the individuals in it progress in knowledge and proficiency and effective service to

their companies. They know that such progress is made up of many individual contributions, large and small, from many sources, and out of many different problems and experiences. They know, too, that the individual will progress more rapidly and more soundly as the contribution of one is made known to all. Thus all go forward together.

10. Anybody Can Buy—IF

If we will bear these qualifications in mind, we need not be unduly concerned over the assertion that "Anybody can buy". It is true. Anybody can buy—but not through instinct or innate talent, nor by virtue of a purchasing title. Rather, anybody can buy because the science, and the detailed knowledge, and the sources of information and help are available to all.

In coping with the complex business of buying, the tools are at hand. But tools do not make the craftsman. It is for the individual to learn to use these tools for their proper purpose, and to develop his own skills. That is sometimes a long and difficult process, but it can be accomplished by the man

who has a real comprehension of what the purchasing job can mean and has the will to fit himself for the task.

Anybody can buy *better*, if he will follow the same course. There is no buyer, however competent and experienced he may be, who hasn't still plenty to learn. The willingness to learn, and the recognition of ever wider possibilities in purchasing, are the characteristic marks of the growing purchasing executive. Are you willing to be just anybody, buying as anybody can buy? Or will you be somebody doing a better buying job and helping to build a better definition of this business of buying?

The literature of purchasing consists of words. Purchasing confer-

ences are made up of conversation—constructive, important, enlightening, purposeful, but still conversation. But a whole year of working days lies ahead. What is written and said has significance and value only to the extent to which you read and listen with one steadfast purpose—to translate it into better buying practice and more effective purchasing performance.

Here you may find some new tools, and sharpen some of the old ones. The use you make of these tools, the skill with which you wield them to shape better purchasing service for your company—that is up to you. There has never been a time when there was greater need, greater opportunity, and greater reward for real buymanship.

Trend of Business
As Seen In Current
News & Statistics

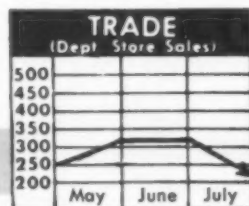
Where We Stand



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index.....1935-1939=100		223	223	199	0	+12.0
Steel Production (Weekly).....000 net tons		2,037	2,063	1,895	- 1.2	+ 7.5
Electric Power Production (Weekly).....mil KWH		6,077	6,734	5,380	- 9.6	+13.0
Bituminous Coal Production (Weekly).....000 net tons		1,410	9,925	1,597	-76.6	-11.7
Auto, Truck & Bus Output (Weekly).....units		95,825	145,719	128,056	-34.2	-25.2
Petroleum Output (Weekly).....000 bbls.		6,088	6,087	5,398	0	+12.8



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
All Commodities (BLS).....1926=100		179.7	181.7	163.0	- 1.1	+10.2
Farm Products.....1926=100		196.3	198.0	178.2	- 0.8	+10.1
Metals & Metal Products.....1926=100		188.2	189.0	172.3	- 0.4	+ 9.2
Building Materials.....1926=100		224.2	226.8	206.7	- 1.1	+ 8.4
Steel Billets (Pittsburgh).....net ton		\$56.00	\$56.00	\$53.00	0	+ 5.7
Steel Scrap, heavy melting, Pitts.....ton		44.00	44.00	41.75	0	+ 5.4
Copper, electrolytic.....lb.		.241½	.241½	.221½	0	+ 8.8
Rubber (rib-smoked sheets).....lb.		.52	.66	.361¼	-21.2	+43.4
Wheat, No. 2.....bu.		2.71½	2.695½	2.561¼	+ 0.7	+ 5.9



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Dept. Stores Sales Index (Fed. Res.).....1935-39=100		219	311	218	-29.6	+ 0.5
Commercial Failures (Dun & Bradstreet).....no.		129	172	138	-25.0	- 6.5
Freight Carloadings.....cars		588,246	813,326	553,910	-27.6	+ 6.2

FINANCE

Stock Prices (Standard & Poor's).....1926=100	173.1	173.4	134.0	- 0.1	+29.2
Bank Clearings (New York).....mil \$	7,781	8,117	7,236	- 4.1	+ 7.5
Federal Reserve Credit.....mil \$	24,267	23,783	18,757	+ 1.7	+29.3
Currency in Circulation.....mil \$	27,893	27,499	27,169	+ 1.4	+ 2.6

MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

Value of Manufacturers' Sales Seasonally Adjusted (Millions of Dollars)

All Manufacturing	18,600
Durable goods	8,400
Iron and steel	2,729
Nonferrous metals	593
Electrical machinery	1,240
General machinery (exc. elec.)	1,755
Motor vehicles & equipment	1,566
Transportation equipment (exc. motor vehicles)	396
Lumber and timber products	619
Furniture & finished lumber products	461
Stone, clay & glass products	588
Nondurable goods	10,200
Food and kindred products	3,559
Beverages	497
Tobacco products	307
Textile-mill products	1,426
Apparel	945
Leather and products	338
Paper and allied products	709
Printing and publishing	692
Chemicals and allied products	1,703
Petroleum and coal products	359
Rubber products	1,344

Book Value of Manufacturers' Inventories Seasonally Adjusted (Millions of Dollars)

All Manufacturing	29,500
Durable goods	13,900
Iron and steel	3,458
Nonferrous metals	1,012
Electrical machinery	1,968
General machinery (exc. elec.)	3,801
Motor vehicles & equipment	2,263
Transportation equip. (except motor vehicles)	950
Lumber and timber products	631
Furniture & finished lumber products	798
Stone, clay & glass products	600
Nondurable goods	15,600
Food and kindred products	18,681
Beverages	3,374
Tobacco products	1,162
Textile-mill products	1,679
Apparel	3,005
Leather and products	1,786
Paper and allied products	652
Printing and publishing	773
Chemicals and allied products	689
Petroleum and coal products	2,370
Rubber products	2,134

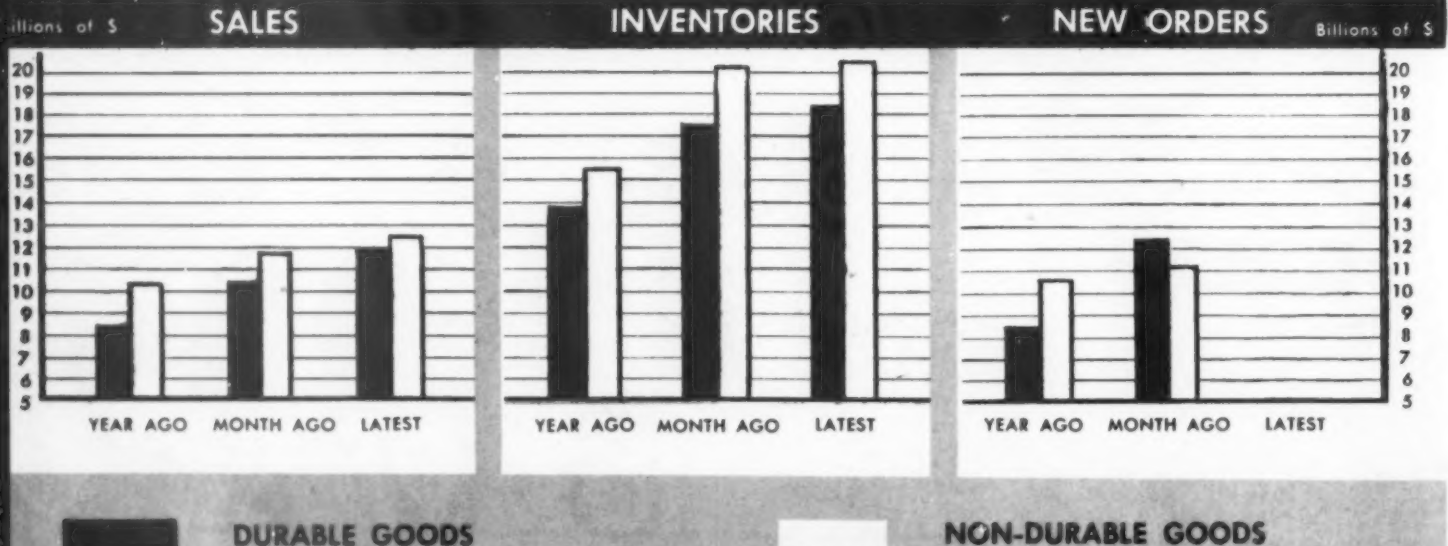
Manufacturers' New Orders (Unadjusted)

All Manufacturing	19,100
Durable Goods	8,500
Non-Durable Goods	10,600

	1950	1951				
	May	January	February	March	April (p)	May
All Manufacturing	18,600	23,166	22,646	23,399	22,327	23,500*
Durable goods	8,400	10,398	10,338	10,993	10,540	11,000*
Iron and steel		2,729	2,642	2,790	2,708	
Nonferrous metals		593	584	607	587	
Electrical machinery		1,240	1,254	1,249	1,140	
General machinery (exc. elec.)		1,755	1,802	1,946	1,928	
Motor vehicles & equipment		1,566	1,550	1,696	1,574	
Transportation equipment (exc. motor vehicles)		396	415	421	446	
Lumber and timber products		619	586	659	672	
Furniture & finished lumber products		461	454	537	478	
Stone, clay & glass products		588	587	603	544	
Nondurable goods	10,200	12,768	12,309	12,406	11,786	12,500*
Food and kindred products		3,559	3,297	3,331	3,245	
Beverages		497	427	426	421	
Tobacco products		307	300	280	281	
Textile-mill products		1,426	1,407	1,371	1,246	
Apparel		945	882	796	633	
Leather and products		338	365	337	286	
Paper and allied products		709	686	707	680	
Printing and publishing		692	731	763	727	
Chemicals and allied products		1,703	1,631	1,732	1,634	
Petroleum and coal products		359	346	346	298	
Rubber products		1,344	1,286	1,386	1,337	
		1,791	1,795	1,838	1,858	
		454	435	462	n.a.	
All Manufacturing	29,500	34,928	33,474	36,415	37,746	38,800*
Durable goods	13,900	16,248	16,660	17,001	17,570	18,300*
Iron and steel		3,458	3,532	3,519	3,613	
Nonferrous metals		1,012	1,016	1,018	1,032	
Electrical machinery		1,968	2,032	2,103	2,206	
General machinery (exc. elec.)		3,801	3,932	4,063	4,206	
Motor vehicles & equipment		2,263	2,232	2,236	2,321	
Transportation equip. (except motor vehicles)		950	1,012	1,122	1,166	
Lumber and timber products		631	672	678	711	
Furniture & finished lumber products		798	820	812	838	
Stone, clay & glass products		600	626	658	687	
Nondurable goods	15,600	18,681	18,814	19,414	20,176	20,500*
Food and kindred products		3,374	3,435	3,618	3,846	
Beverages		1,162	1,202	1,262	1,295	
Tobacco products		1,679	1,642	1,658	1,686	
Textile-mill products		3,005	3,046	3,110	3,270	
Apparel		1,786	1,768	1,854	1,920	
Leather and products		652	598	616	642	
Paper and allied products		773	791	833	867	
Printing and publishing		689	710	723	720	
Chemicals and allied products		2,370	2,424	2,505	2,606	
Petroleum and coal products		2,134	2,133	2,164	2,234	
Rubber products		564	557	556	n.a.	
All Manufacturing	19,100	28,860	25,403	28,574	23,684	n.a.
Durable Goods		15,123	13,153	15,478	12,351	n.a.
Non-Durable Goods		13,738	12,250	13,097	11,333	n.a.

*estimated p — preliminary n.a. — not available

SALES, INVENTORIES AND NEW ORDERS



PRODUCT DELIVERY INFORMATION

CHANGES in this month's report continue mixed, with the greatest trend toward the long side, but a note of caution and uncertainty has appeared. The slight slackening in the feverish industrial pace of the past year, and possibilities of peace in Korea, are being watched carefully and may in time affect deliveries on many products. One fastener manufacturer writes: "During the first half of the year, we were promising deliveries of standard fasteners 12-26 weeks from date of the receipt of an order. Recent contraction in demand will undoubtedly permit us to improve delivery promises as we are able to reduce the over-all backlog of unfilled orders, and . . . estimate that in the course of the next few months deliveries should improve so that shipment can be made on orders during a period of 6-12 weeks from date of their entry." This is a general statement, however, and it is to be noted that delivery on self-locking nuts, quoted by two other manufacturers, is much longer than previously quoted.

Several additions appear on this new list, notably in chemicals. The word "contract" beside these products means that the information given applies to deliveries against existing contracts and does not indicate that these deliveries could be expected by a spot buyer.

Delivery times indicated in the report are based on information received from several manufacturers of identical products, and the time shown is the range of delivery times reported by them. It should be borne in mind that a DO rating is not assurance of prompt delivery, nor an immediate source of supply.

	STANDARD Products	SPECIAL Products	D.O. Orders
ABRASIVES			
Grinding wheels, bonded products	Stock	3-10 wks	2-8 wks
Abrasive grain	Stock		
ALLOYS, STEEL			
HR alloy bars	21 wks	21 wks	21 wks
CD alloy bars	26 wks	26 wks	26 wks
Carbon tube rounds	30 wks	30 wks	30 wks
BEARINGS			
Ball Bearings (dep. on size)	12-40 wks	24-50 wks	
Needle Bearings	10-18 wks	14-24 wks	8-24 wks
BOXES			
Folding (no printing)		6 wks	3 wks
Folding — printed		6 wks	3 wks
Bakery boxes	4 wks	6 wks	3 wks
Folding cartons		6 wks	4 wks
Candy boxes	4 wks	8 wks	4 wks
Metal Boxes (Spare parts)	4 wks		3 wks
Corrugated boxes		6 wks	
Solid fibre Boxes		6 wks	
BRASS			
Sheet	Indefinite		6-11 wks
Rod	Indefinite		6-11 wks
Wire	Indefinite		6-11 wks
BRUSHES			
Industrial floor brushes	5 wks		3 wks
BUSHINGS			
Bronze	22 wks		
CASTERS			
Casters and Wheels	4-16 wks	4-20 wks	3-12 wks
CASTINGS			
Iron	9 wks		
Aluminum	9 wks		
CHAIN			
Hardware	7 wks	7 wks	Prompt
Tire	3 wks	3 wks	Prompt
Roller	Stk to 24 wks	12-36 wks	Stk to 12 wks
Steel	10 to 12 wks		8 to 10 wks

	STANDARD Products	SPECIAL Products	D.O. Orders
CHEMICALS			
Soda Ash (Contract)	Reasonably prompt		
Caustic Soda, liq.	Reasonably prompt		
Caustic Soda, dry	30 days		
Chlorine	Indefinite		
Ammonium Chloride	Prompt		
Caustic Potash, dry	3 wks		
Caustic Potash, liq.	10 days		
Sodium Nitrite	30 days		
Paradichlorobenzene	2 wks		
Methanol	1 wk		
Calcium Chloride	Prompt		
COATINGS			
Protective Coatings	2-8 wks	4-8 wks	1-2 wks
CONTAINERS			
Containers (Can Co.)	3-4 wks	9 wks	
Stampings (Can Co.)	6 wks	9 wks	2-3 wks
Misc. (Can Co.)	2-4 wks		3-4 wks
Wood cleated fibre shooks		4 wks	4 wks
Food pails, wire handles	4 wks	6 wks	3 wks
Wooden boxes		6 wks	4 wks
Wooden box shooks		6 wks	4 wks
Corrugated cans	16-20 wks		7-9 wks
Cylindrical Paper Tubes & Containers		3-4 wks	
Wirebound Boxes & Crates	2-3 wks (during Aug. & Sept.)		
COUPLINGS			
Flexible couplings	Stk-8 wks	8 wks	6 wks
CLUTCHES			
Clutches, over-running	3-12 wks	12 wks	6 wks
CRANES			
Traveling lift	38-40 wks	28-30 wks	28-30 wks
DIE CASTINGS			
Zinc		9 wks	4 wks
Aluminum		9 wks	4 wks
Tools, Dies, etc.		18 wks	9 wks
ELECTRICAL			
Motors	12-30 wks	17-20 wks	4-12 wks
Gear motors	Stock	4-8 wks	
Variable speed drives	3 wks		
Rigid Conduit	30 wks		4 wks
ABC Cable (BX)	39 wks	6 wks	4 wks
Loomwire	17 wks		4 wks
Bldg. wire	26 wks	22 wks	6 wks
Outlet boxes and connectors	22 wks		4 wks
Electrical Motor Controls	44 wks	24 wks	24 wks

PRODUCT DELIVERY INFORMATION continued

	STANDARD Products	SPECIAL Products	D.O. Orders
ELECTRONIC TUBES			
Receiving types	4-26 wks	Indef.	1-26 wks
Television picture I & T types	1 wk	50 wks	1 wk
	1-50 wks	Indef.	1-50 wks
ENGINES			
Single cyl. gas. engines	20-30 wks	25-35 wks	15-20 wks
FASTENERS (also see introduction)			
Cotter pins	2-3 wks	8-12 wks	2-3 wks
Rivets, tubular	8 wks	8-10 wks	4-6 wks
Rivets, split	4 wks	4-6 wks	4 wks
Rivets, Solid Steel	4-35 wks	4-35 wks	4-6 wks
Washers	3 wks	3 wks	2 wks
Lockwashers	2 wks	9 wks	2 wks
Self-locking nuts	8-30 wks	12-20 wks	8-30 wks
Bolts and screws	2-26 wks	10-22 wks	4-14 wks
Machine screw nuts	24-32 wks		
FIBRE PRODUCTS			
Vulcanized, .010-3/32"	26 wks	34 wks	13 wks
Phenol fibre	8-10 wks	10 wks	6 wks
FIRE PROTECTION			
Methyl Chloride	1 wk	2 wks	1 wk
Sulphur Dioxide	1 wk	1 wk	1 wk
Dry Chemical Extinguishers	3 wks	5-9 wks	2 wks
FITTINGS			
Welding Fittings	Stk. to 17 wks	22 wks	Stk. to 17 wks
Flanges	Stk. to 17 wks	22 wks	Stk. to 17 wks
FORGINGS			
Large	6-17 wks	12-26 wks	
FOUNDRY			
Riddles	2 wks	3 wks	2 wks
Sieves, Flour	3 wks	6-8 wks	2-5 wks
GEARS			
CI & CS cut & cast tooth	9 wks		7 wks
HOISTS			
Heavy Lift	20-24 wks	20-24 wks	20-24 wks
Hoists	Stk. to 13 wks	Stk. to 13 wks	Stk. to 13 wks
INSULATION			
Mineral wool	2 wks	4 wks	1 wk
MACHINE TOOLS			
Machine tools	44 wks	56 wks	36 wks
Grinders	9 wks	17 wks	4 wks
OFFICE EQUIPMENT			
Lithostrip, Lithosets, Lithofold	12-20 wks		
PIPE			
Wood lined pipe	3-6 wks		4 wks
Saran lined pipe	6 wks		4 wks
Saran tubing	Stock	4-6 wks	
Saran fittings	Stock	4-6 wks	
PIPE, STAINLESS			
S S and Monel pipe	13 wks		6 wks
S S and Monel fittings	13 wks		6 wks
PIPING, FABRICATED			
Fabricated	13 wks	26 wks	
Up to 500 tons		4 wks	Preference
Up to 300 tons		75 tons per mo	Preference
PULLEYS			
Cast iron	12 wks		9 wks
Welded steel	8 wks		6 wks
PUMPS			
Single Stage 10" & Below	14 wks	22-35 wks	14-35 wks
12"-16"	18-35 wks	27-40 wks	18-40 wks
18" and above	27-45 wks	36-50 wks	22-50 wks
Multistage Standard	18-52 wks	31-52 wks	18-52 wks
Special Multistage	52-65 wks	65-80 wks	52-80 wks
turbine pumps	3-6 wks	10-12 wks	3-10 wks
Centrifugal:			
Close Coupled	3-4 wks	16-45 wks	3-45 wks
Standard End Suction	10-12 wks	18 wks	10-18 wks
Chemical	12-18 wks	20 wks	12-20 wks
Double Suction to 6"	14 wks	20 wks	14-20 wks
Double Suction 8"-16"	35 wks	40 wks	35-40 wks
Double Suction 18" and Above	35-45 wks	50 wks	35-50 wks

PUMPS (Cont.)

	STANDARD Products	SPECIAL Products	D.O. Orders
2 to 4 stage Split Case	35-45 wks	50 wks	35-50 wks
Other Split Case	52 wks	60 wks	52-60 wks
Forged Barrel	65 wks	80 wks	65-80 wks
Special & Vertical	52-65 wks	80 wks	52-80 wks
Regenerative Turbine	3-4 wks	10-45 wks	3-45 wks
Process Pumps	30 wks	50 wks	30-50 wks

RUBBER PRODUCTS

	STANDARD Products	SPECIAL Products	D.O. Orders
Cellular rubber	2-3 wks	5-6 wks	1-2 wks
Silicone rubber	4-5 wks	6-7 wks	2-3 wks
Foam latex rubber	2-3 wks	4-5 wks	1-2 wks
Rubberized Hair, Wool	3-4 wks	4-5 wks	1-2 wks

SAWS

	STANDARD Products	SPECIAL Products	D.O. Orders
Hack saws	4-17 wks	4-26 wks	2-9 wks
Gas chain saws	3 wks	9 wks	2-3 wks

SCREW MACHINE PRODUCTS

	STANDARD Products	SPECIAL Products	D.O. Orders
Screw Machine parts	13 wks		

SHELVING, ETC.

	STANDARD Products	SPECIAL Products	D.O. Orders
Steel Shelving	60 wks		15 wks
Steel Lockers	56 wks		12 wks
Steel Shop Equipment	60 wks		2-12 wks

SPRINGS

	STANDARD Products	SPECIAL Products	D.O. Orders
Springs	13 wks	8-10 wks	6-8 wks
Cold rolled spring steel	17 wks		17 wks

SPROCKETS

	STANDARD Products	SPECIAL Products	D.O. Orders
Sprockets	Stk to 9 wks	9 wks	Stk to 5 wks
Silent chain	Stk to 9 wks	9 wks	Stk to 6 wks
Woodruff keys	Stock	9 wks	Stk to 9 wks

STEEL

	STANDARD Products	SPECIAL Products	D.O. Orders
Bars and billets	15-26 wks		
Plates and sheets	15-21 wks		
Nails	13 wks	13 wks	7 wks
Fence	13 wks	13 wks	7 wks
Barb wire	13 wks	13 wks	7 wks
Steel posts	13 wks	13 wks	7 wks

TOOLS

	STANDARD Products	SPECIAL Products	D.O. Orders
Portable electric	2-36 wks	17 wks to indef.	2-25 wks
Flex. shaft equipment	4 wks	26 wks	4-6 wks
Hand measuring	4-17 wks	4-26 wks	2-9 wks
Precision instruments	4-17 wks	4-26 wks	2-9 wks
Dial gages	4-17 wks	4-26 wks	2-9 wks
Pliers	26 wks		17 wks
Wrenches	26 wks		17 wks
Taps and dies	Stock	6 wks	4-6 wks

TRUCKS

	STANDARD Products	SPECIAL Products	D.O. Orders
Fork	12 wks	16 wks	8 wks
Elec. lift trucks	12 wks	16 wks	8 wks
Hand lift	4 wks	10 wks	3 wks
Hand trucks	2-12 wks		1-12 wks
Trailers	10 wks		6 wks
Ind. wheels (Rubber)	12 wks	14 wks	6-12 wks

TIRES AND TUBES

	STANDARD Products	SPECIAL Products	D.O. Orders
Industrial	2 wks	4 wks	2 wks

TUBING

	STANDARD Products	SPECIAL Products	D.O. Orders
Welded steel	13 wks		9 wks
Welded Stainless	26 wks		9 wks

VALVES

	STANDARD Products	SPECIAL Products	D.O. Orders
Bronze Valves	4-24 wks	10-24 wks	4-8 wks
Brass valves	Stock to 24 wks		10 wks
Iron valves	4-36 wks	(according to size)	10 wks
Cast steel valves	Stock to 36 wks	12-24 wks	4-10 wks
Stainless steel valves	15-36 wks	dependent on materials	24 wks

WIRE PRODUCTS

	STANDARD Products	SPECIAL Products	D.O. Orders
Music spring wire	8 wks	12 wks	6 wks
M.B. spring wire	26 wks		6 wks
H.C. rope wire			9 wks
Brush wire	9 wks	13 wks	6 wks
Industrial wire cloth	4 wks	9-10 wks	9 wks
Fabricated WC products		10 wks	6 wks

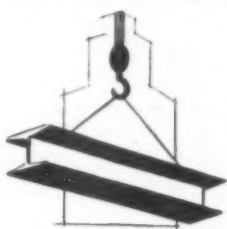
WIRE ROPE & CABLES

	STANDARD Products	SPECIAL Products	D.O. Orders
Wire rope	2 wks	11 wks	13-16 wks
Wire rope and chain fittings	8-12 wks		
Elec. wire and cable	4 wks	13 wks	13 wks
Aircraft cord	4 wks	9 wks	4-9 wks
Aircraft cable wire	13 wks	11 wks	13-16 wks

STRAWS IN THE TRADE WIND

● Production of steel by United States mills during the first half of this year was at a record high, aggregating 52,273,000 tons of ingots and steel for castings. This was nearly as much as the combined output of Great Britain, France and Russia in all of 1950. Production records were also established in the second quarter of the year, and in June.

● Warehouses received more steel than any other classification of steel buyers in May, according to the American Iron and Steel Institute. Total shipments to all



classes of warehouses in the month was nearly 1,231,000 tons, 18% of the total steel shipments. Ordnance and other direct military needs received the greatest percentage increase of all classifications in May, with a total of more than 104,000 tons, compared with 77,200 tons in April and 3,600 tons

in May, 1950. The aircraft industry took nearly 12,500 tons in May, more than four times over the amount one year earlier. Shipbuilding received almost four times as much as in May, 1950.

● The much-discussed proposal of a steel mill for New England continues to receive attention. Following a report by the President's Council of Economic Advisers that a steel mill is needed in the area and a market exists for its production, the National Production Authority granted a four-month extension of a certificate of necessity for construction of a \$250,000,000 plant in the New London, Conn. area. The certificate was granted to New England Steel Development Corporation. At the same time, H. A. Brassert & Co., iron and steel consulting engineers, reported that previous favorable surveys on the feasibility of a mill were "overly conservative." The company said its investigations found the market justified a 50% increase in the size of the mill over an earlier proposal.

● Important new additions to the nation's petroleum reserves may result from oil strikes in Montana and Wyoming. The Shell Oil Company announced the discovery of a new oil-producing area in the Williston Basin of Montana. High gravity oil flowed "at a very substantial rate" during initial tests, the company reported. Socony-Vacuum Oil Company's General Petroleum Corporation struck oil in the Manderson area of Wyoming, and recovered oil of 34° gravity at a rate of 720 barrels daily.

● More than 2,500 plants in the South are valued at \$1,000,000 or more, according to the Southern Associa-

tion of Science and Industry. Preliminary studies of the group show that there are approximately 552 million-dollar plants in the textile industry; 498 in chemicals, petroleum and fertilizers; 335 in food and beverages; 264 in lumber and furniture; 252 in metals and metal fabricating; 212 in machinery and equipment; 161 in clay, coal and other minerals; and 140 in pulp and paper.

● A proposed 15% increase in railroad freight rates was strongly opposed by a number of witnesses at recent Interstate Commerce Commission hearings. Farm, labor, and Government representatives said the increase would have a bad effect on the national economy. An official of the Office of Price Stabilization said that the rise in rates now would add more than \$1,000,000,000 a year to freight bills and would set up a chain reaction on prices generally, creating strong inflationary pressures.

● Shortages of skilled manpower are at their highest peak in a year, according to the Defense Manpower Administration. Local offices of state employment services have reported increasing difficulty in filling openings locally. Fields in which unfilled demand is highest are: mechanical and electrical engineers and draftsmen, machinists, tool and die makers, machine tool operators, skilled aircraft assembly workers and aircraft, auto, railroad and other types of mechanics and repairmen.

● Despite a record volume of sales, net profits of manufacturers, after taxes, declined 8% in the first quarter of



1951 from the last quarter of 1950. Figures of the Securities and Exchange Commission and the Federal Trade Commission show that costs and expenses rose slightly more than sales, causing net operating profit to drop by about 1%. Net profits of the quarter, however, were 36% above

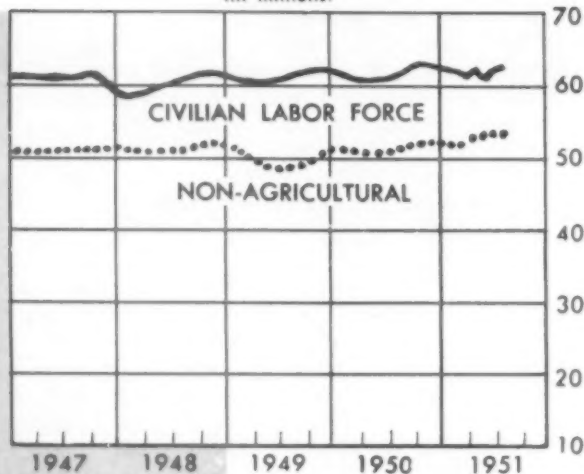
those of the first quarter of 1950, a "period of somewhat depressed business activity," according to the two agencies.

● United States exports and imports dropped slightly in May, compared to the previous month, but were still at a relatively high level. May exports, at \$1,350,500,000 were 58% above the monthly average last year and 22% above the average for the first quarter of 1951. Imports during the month, at \$1,017,700,000, were 38% higher than the monthly average of 1950, but a shade below the average for the first quarter of 1951.

THE PULSE OF BUSINESS

EMPLOYMENT

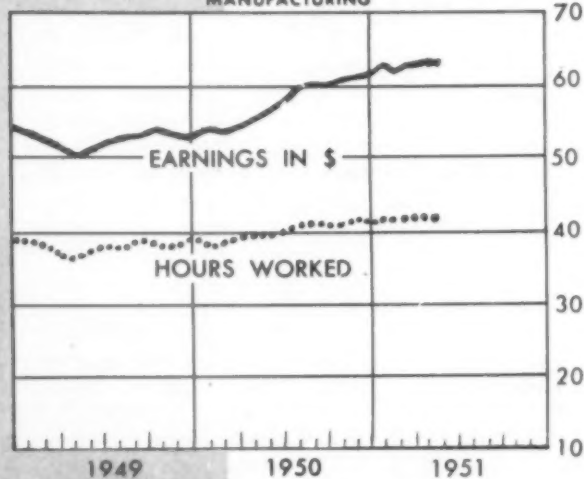
(in millions)



Source: Bureau of the Census

AVERAGE WEEKLY EARNINGS AND HOURS

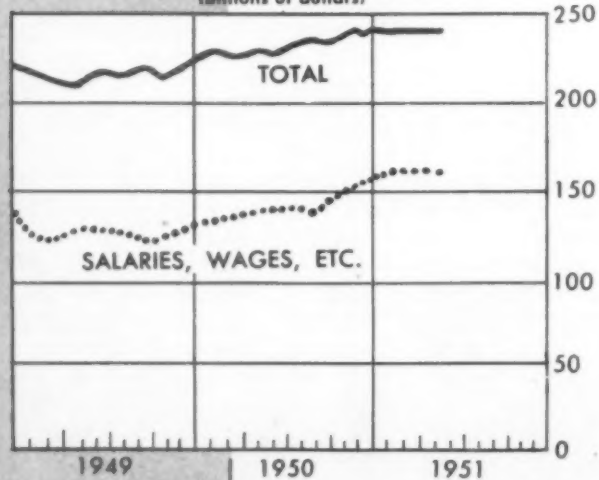
MANUFACTURING



Source: U.S. Department of Labor

PERSONAL INCOME

(billions of dollars)



Source: U.S. Department of Commerce

This month the national economy was giving an imitation of a man who had galloped wildly up a street until he came to a multiple cross-roads heading every which-way. A bewildering maze of directional signs gave no help, and as an added fillip, the weather bureau had predicted rain, sunshine, and deep fog, all in the same afternoon.

Some of the signs, aside from his own experience, that had the businessman guessing, are shown in this section. Inventories, both at the retail and manufacturing level, were climbing, reflecting strong consumer resistance that was backing up all the way. Total business inventories at the end of May were valued at \$69,900,000,000, an all-time high. One gauge of consumer buying interest, installment credit, was declining, slowly but surely, under the influence of government restrictions. A slight softening in the commodity price index was taking place. On the brighter side, employment, wages and hours, and personal income were at a very high level, with promise of going higher.

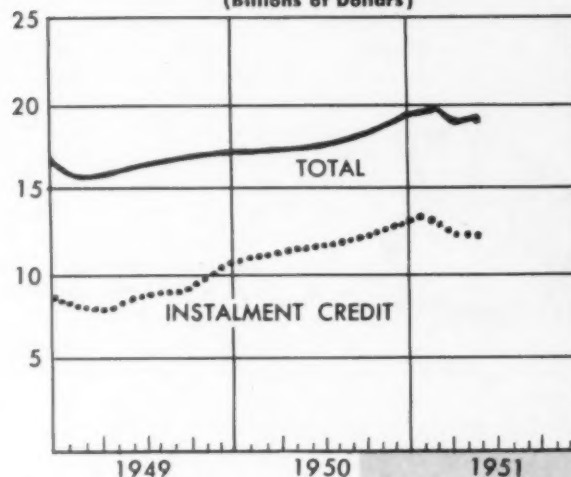
After weighing good against bad, many observers figured the outlook this way:

The war-scare-inspired buying spree the country went through for the first ten months after the Korean outbreak has about spent itself. The bloom is temporarily off the boom, and a kind of cat-and-mouse game is developing between the producers (including both manufacturers and retailers) sitting on one side atop the tremendous amount of goods made in the last year. On the other side are the consumers, no longer panicky that the goods they want are going to disappear in the event of a war. Now they can afford to wait, and see if prices won't drop. (Interesting note: a survey by Michigan University's Research Center among 1,000 families reveals that five out of seven persons believe this is the wrong time to buy. They are not worried about shortages; are concerned about their own shortage of cash. It would appear that much of the growth in personal income has been absorbed by higher living costs, or by overbuying on the part of the consumer.)

At the risk of oversimplifying a complex problem, it might be asked, "Who will outwait whom?" One point must be made clear at the start. The great program of rearmament undertaken by the country last summer had more of a long-range object than merely winning the Korean war. It was a long over-due move to counter the active threat of aggression loose in the world, of which the attack in Korea was only one aspect. A truce now in Korea will not slow down that program. And it is that program that will eventually begin to bite into the production of consumer durables, and thus play a big part in settling the little tug-of-war that now exists between the producers and the buying public. In a recent newspaper interview, Secretary of Commerce Sawyer, pointing out that defense expenditures will be running at about a \$65,000,000,000 annual rate by June, 1952, said, "after military demands are met there will not be enough material left over to build as many houses, automobiles, refrigerators, toys and even paper clips as the American people would like."

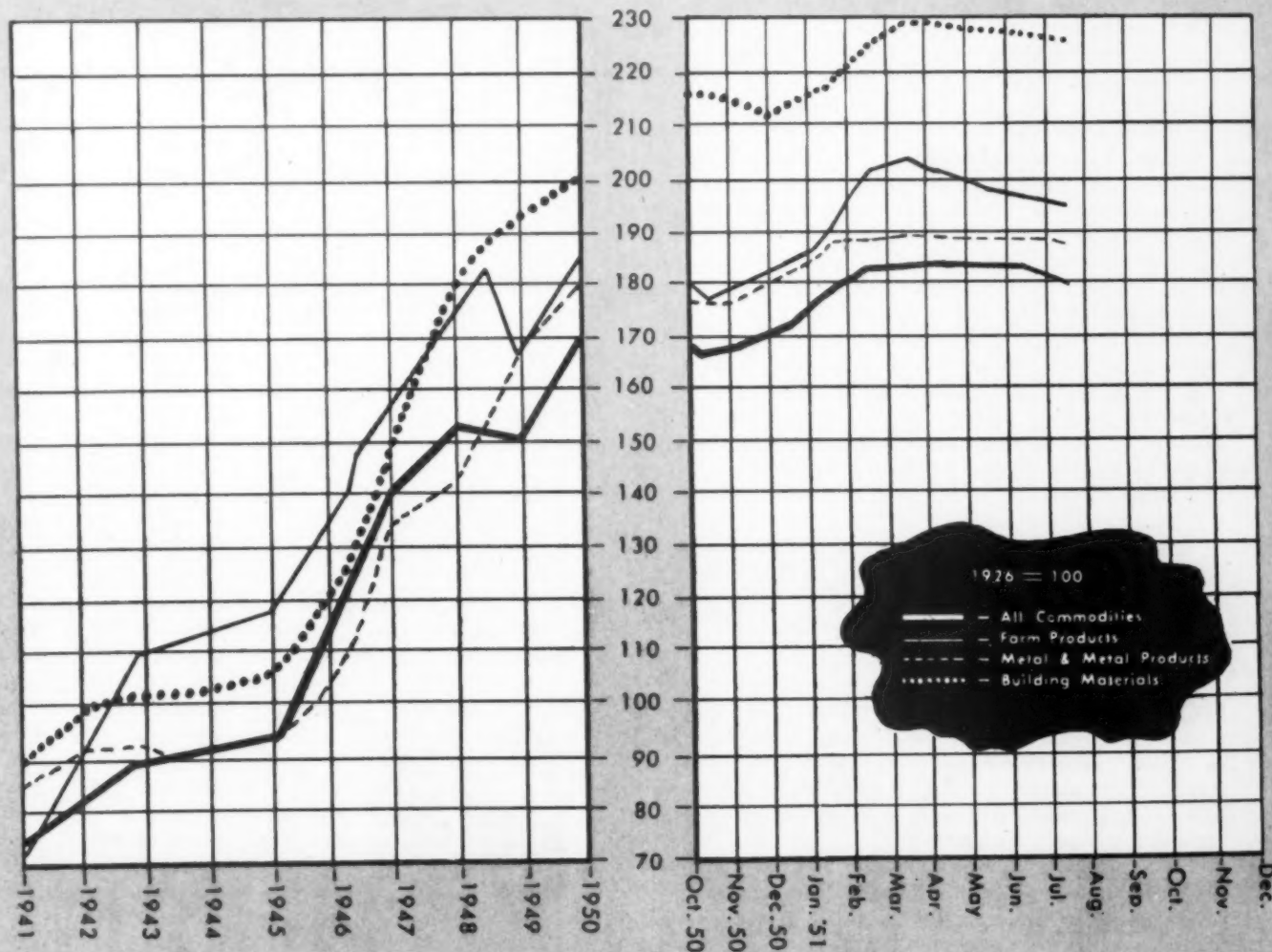
It appears, then, that this contest will end, like so many in a kind of compromise. There will be concessions by merchants to move their goods — prices will be cut to draw the customers and cut down on costly inventory. The consumer will perhaps hesitate longer, in the hope that prices will drop even more, but under the pressure of the prospects of freer money and a decline in the availability of goods, will begin to buy. This, in the opinion of economists, will cause a drop in prices that may extend all the way back to the raw material level, and in the short view create something of a recession. But the real pressure from the arms program is yet to come, and it is expected that its chief result, unless expertly handled by both business and government, will be not de- but plenty of in-fla-tion.

CONSUMER CREDIT (Billions of Dollars)



Source: Federal Reserve Board

THE PRICE PICTURE



MATERIALS AND MARKETS

STEEL: The most optimistic long-range views on steel supply must seem faintly ironic to those users — particularly the “non-essential” ones — sweating out the present situation. N.P.A. rocked the industry with an order that



95% of all steel ingots, and healthy percentages of other products be set aside for allocation to essential users under the Controlled Materials Plan. This was followed by an order to producers to set aside 98% of stainless steel production for the same purpose, and up to 95% of various carbon and low alloy, and alloy steels. Set-aside percentages on steel products commonly used in consumer durables are as follows: sheets and strip, hot rolled, 70%; cold rolled sheets, 54%; cold rolled strip, 60%.

Prospects of the non-essential users grew dimmer with each extension of Government control. So poor, in fact, that there was widespread opinion that a closed-end C.M.P. would have to be established to prevent a chaotic scramble for the small amount of free steel that will be available under open-end C.M.P. The fact that peace in Korea may be attained shortly will not have the slightest effect on the situation in view of the new controls, trade sources said. Iron Age said a Korean peace might cause some to withdraw from the gray market, but regardless of what happens, most steel products will be in extremely short supply throughout this year and well into 1952.

The effect of steel controls was pointed up by recent testimony by an official of the Chrysler Motor Corp. who said the company's steel inventory is “measured in just a few days' supply.” He said a check with Chrysler's major steel suppliers showed that none of them would make any commitments as to how much steel they could ship the company in September. He said it was a “very good possibility” that this would cause a halt in production. Irving A. Duffy, vice-president in charge of purchasing for Ford Motor Company, assailed C.M.P., saying N.P.A. plans to put every manufacturer in the country under the plan in the fourth quarter. “Who”, he asked, “can possibly possess the Solomon-like judgment to allocate materials fairly to each company through the nation?”

Scrap continues to be a problem to the steel industry, and urgent pleas to increase the flow of this vital material back to the mills are being widely disseminated. (Cf. Purchasing Opinion Poll on page 75.)

NON-FERROUS METALS: Shortages in basic metals are expected to continue for some time. An official of N.P.A. has declared that forecasts of early easing of shortages are merely wishful thinking. He said investigations of inventories in hands of users and distributors showed little metal on hand.

Copper demand continues heavy, with current high production now threatened by a strike at the Garfield,

Utah smelter of the American Smelting & Refining Company. This is reported to be tying up about a quarter of the nation's copper output. June production of primary copper, according to the Copper Institute, was 79,884 tons, compared with 89,609 tons in May.

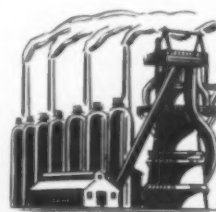
Continued shortage of zinc, and heavy demands put on present supply by orders carrying ratings under C.M.P. caused N.P.A. to order slab zinc supplies put under allocation as of August 1. Little change in zinc supply during June was reported by the American Zinc Institute. Production was off slightly, and deliveries rose somewhat. Smelter inventories dropped slightly to 15,791 tons.

Imports of lead into the United States have been cut sharply because of the world price which now runs from 6 to 8 cents a pound higher than the ceiling price of 17 cents a pound in the domestic market, an official of the St. Joseph Lead Company declared recently. Felix E. Wormser, vice-president, criticized the idea, said to be under consideration, of the government buying foreign lead, selling it to domestic users at ceiling prices and absorbing the difference. He declared that imports this year are expected to amount to only 250,000 tons, compared with 550,000 in 1950, thereby creating a shortage.

Primary aluminum production in the United States during May was 135,440,954 pounds, only slightly above the 135,402,337 produced in April, according to The Aluminum Association . . . International Nickel Company has already increased its monthly nickel production by 1,000,000 pounds, bringing it to 21,000,000 pounds. The increase had originally been scheduled for the end of 1951.

FUELS: Stockpiling of fuels now for the winter months is being continuously urged by Government and industry officials, as a protection against a possible tie-up in transportation. The burden expected to be put on transportation this fall and winter makes it necessary that much of the heavy fuel traffic normally concentrated in the period be spread over the summer months. Defense Mobilizer Wilson warned recently. He urged both domestic and industrial users to protect themselves against possible shortages by completing the maximum part of their fuel purchases not later than September.

A warning that gasoline rationing will occur within 8 or 10 months if the petroleum industry does not obtain nearly 35% more steel for drilling equipment, pipelines



and other transportation, was voiced by Interior Secretary Chapman. He said domestic consumption of petroleum products increased 11% in the year ended April 1, and is expected to continue upward. The industry will not be able to satisfy that demand, even with 1,000,000 barrel-a-day imports, unless more steel is available, he declared.

How LIFO Inventory Valuation Affects Profits and Taxes

By Jackson W. Smart, Touche, Niven, Bailey & Smart, Chicago

THE last-in first-out (LIFO) method of pricing inventories is not entirely new, but it is only in recent years that it has been much used, and even today its application is limited to approximately 20% of total inventory values. The traditional method of pricing is on the basis of cost (first-in first-out, or FIFO) or market, whichever is the lower. Other methods of inventory pricing are considered to be merely variations of these two methods, and to fall generally into either one class or the other.

The essential difference between the two inventory methods is that under FIFO inventory profits are included in financial reporting, while under LIFO such profits are not recognized in the accounts. The term "inventory profits" has different meanings to different people, but in this discussion is intended to mean that part of the profit of an enterprise which must be reinvested in replacing inventories at higher prices than the inventories sold.

As corporations have become larger, and their financial affairs correspondingly more complex, with ownership more diversified, there has developed a gradual shifting of emphasis from the balance sheet to the income account. The latter is usually considered to be of primary importance to the reader of financial statements, and the balance sheet is studied principally to ascertain the general financial condition, and to form an opinion as to the extent a company is in a position to pay out earnings in divi-

dends and/or finance working capital requirements and expansion.

As the emphasis shifted from the balance sheet to the income account, some few managements became conscious of the part that inventory profits or losses, over which they usually had little or no control, were playing in the determination of annual profits. This thinking is illustrated by the 1920 report to the shareholders of National Lead Company, from which the following is quoted:

There have been several recent requests for information on the last-in first-out (LIFO) method of inventory valuation. While it is primarily a matter of accounting theory and practice, with particular significance in connection with corporation taxes, the increasing trend toward placing responsibility for inventory policy and management in the hands of the purchasing department makes it a subject of importance to many purchasing executives.

Mr. Smart's paper was presented at the 32nd Annual International Cost Conference of the National Association of Cost Accountants at Chicago in June. It presents both sides of the issue, and the practical applications of the method, from both the accounting and tax standpoints.

LIFO pricing has produced substantial benefits for certain types of industries, particularly for those companies which adopted the method early, on the basis of 1938 prices. The real test of LIFO will come in a deflationary period, with no tax benefits and possible additional tax costs. "If under these conditions there is still a trend toward its use," says the author, "we all must agree that LIFO has been accepted on its own merits as an accounting and business ideology."

"For all practical purposes, the Normal Stock is like a piece of machinery which the Company has to have always on hand in order to operate. When the price of Pig Lead, for instance, went to 11¢ a pound, the National Lead Company could not make an actual profit thereon without selling its Normal Stocks but, in that event, it would either have to buy back such Normal Stocks at the then market, or go out of business. . . . This being true, we do not deceive ourselves by marking up inventory values and taking book profits, upon which we could not realize, to be followed later by book



"God!—I hate these outfits that demand invoices in triplicate!"

losses of like amount. Our stockholders are also likely to be deceived by apparent high earnings followed by severe losses, if such book profits and losses are reported in our published statements."

A Controversial Theory

The National Lead Company was the forerunner in developing that philosophy of applying accounting principles to the financial statements which had the effect of eliminating certain of the inventory profits from the accounts. A few other companies adopted the normal or base stock method of inventory valuation prior to the period that it was acceptable for tax purposes. Other companies accomplished the same objectives by providing inventory reserves. However, until the tax laws were changed in 1938 and 1939 to permit taxpayers to eliminate such profits in computing taxable income, there was no substantial acceptance of LIFO or similar methods indicated in published financial statements.

If we eliminate tax considerations, this question of whether inventory profits should be eliminated in financial statements is the object of much controversy among accountants, economists, and business management. Those who do not favor the general use of LIFO state that:

1. The purpose and reliability of the balance sheet is affected if the difference between actual cost and carrying value of inventories is substantial. (This objection may be partially overcome if such difference is shown either parenthetically or by way of footnote in the financial statements.)

2. Inventory profits have actually been realized on the disposal of inventories,

and it is only factual to recognize this fact both in the income account and the balance sheet. The fact that such profits may be due principally to economic conditions is not ordinarily relevant as an accounting matter.

On the other hand, the proponents of eliminating inventory profits by the use of LIFO, normal or base stock methods of inventory valuation, or by reserves, believe:

1. An important function of the income account is to give information on the earning power of an enterprise; inventory profits that are primarily the result of economic conditions and not management planning should be excluded.

2. When the inventory profits are to be used to rebuild the same inventories at higher price levels, no part of this profit is available for either distribution to shareholders or expansion of the business, and therefore such profits are not truly earnings.

Some LIFO adherents consider the use of LIFO as a principal step of a concept of economic income which, in their opinion, has more significance and utility than traditional accounting concepts in a fluctuating economy. Some also recommend a charge to the current income account of depreciation based on current cost levels of plants and equipment instead of historical cost. If and when there is a general adoption of LIFO for the entire inventory (and not segments thereof, as is customary today) it is possible that this view may be more widely accepted, although there are substantial differences between the two types of assets which would affect the application of the current cost theory.

LIFO and Taxes

The tax laws were revised in 1938 and 1939 so that taxpayers could elect to place all, or part, of their inventories on a basis which had the effect of eliminating a substantial part of inventory profits from taxable income. Initially, only the nonferrous and tanning industries were allowed to qualify, but in 1939 the privilege was extended to all taxpayers. In 1940, tax rates were increased materially, and it was in this year that many companies decided to adopt LIFO in the valuation of at least some part of their inventories. It is fairly evident that tax considerations were the motivating force. In any event, the adoption of LIFO was helpful from a financial standpoint since inventory profits in succeeding

years on the LIFO part of the inventories have all been available in cash to maintain inventories at higher price levels without the need of additional financing. Under the FIFO method of pricing inventories, profits thereon would have been taxed at rates varying from 38% to 85½%, and to this extent inventory replacements would have had to be financed from other sources.

Up to now, the use of LIFO has been principally confined to larger companies in the following industries: petroleum, iron and steel, food, meat packers, textiles, nonferrous metals, chemicals, paper and pulp, leather and shoes, lumber and wood, department and specialty stores. In some instances, the amount of inventory on LIFO may not be more than 5%, while in other instances it may approach 100%. Under these circumstances there is no clear disclosure of profits. This situation has caused unhappiness among accountants who have been endeavoring to increase the usefulness of financial statements by narrowing the areas in which there exist a variety of practices.

Unsuitable for Some

A principal reason that LIFO has not been adopted by many companies is the lack of suitability of this method of pricing inventories under certain circumstances. For example, its use would not be suitable for companies who produce goods principally after receipt of orders from customers, and otherwise carry small inventories except as required in processing such orders. Illustrations of this type of company are: airplane manufacturers who build principally on specific contracts; builders of heavy machine tools manufactured on special orders; so-called job shops of every description, except possibly for inventories of materials or parts carried in stock if significant.

The Committee on Accounting Procedure of the American Institute, in a research bulletin on Inventory Pricing, has explained the circumstances under which LIFO may be used as follows: "... where sales prices are promptly influenced by changes in reproductive costs, an assumption of LIFO flow of cost factors may be appropriate. Where no such cost-price relationship exists, the FIFO or an 'average' method may be more properly utilized."

There are many companies, how-

ever, where the use of LIFO would be entirely suitable, who have failed to adopt it either for tax purposes or in their financial accounting. While there are many reasons for this, a few of the more important ones may be summarized as:

1. Lack of a full appreciation of the inflationary period being experienced in our economy, since it is only under conditions of rapidly changing price levels that the use of LIFO has a material effect on the earnings in comparison with traditional inventory methods.

2. Although LIFO will reduce taxes in an inflationary period, it reduces profits even more, and the management of many companies has been reluctant to institute changes which would reduce their reported earnings.

3. The fear that in a deflationary period inventory prices would be lower than the floor which is established at the time LIFO is adopted and, further, that the company would lose the benefits of tax deductions otherwise available because of the irrevocable election that is made at the time of its adoption.

4. The general belief of many taxpayers, which has been fostered by the Treasury Department in its regulations and rulings, that the elective method (LIFO) had little or no application to a large proportion of inventory situations.

5. The cost of installing and maintaining additional records, as well as the fear of changes which might be required in existing records.

These reasons have all been valid and cogent in varying degrees. However, as experience has been gained in the workings of the law, there has developed a better understanding of LIFO problems, the extent of its usefulness, and the methods of its application. This has been particularly true in the past year or so, since the decision in the Hutzler case and the recognition by the Treasury Department of the so-called dollar-value approach. As a result, it appears to be possible today, where the use of LIFO is applicable, to apply the elective method of inventory valuation to most inventories on a basis of sufficiently broad groupings or classifications to be practical from the standpoint of the taxpayer and at the same time acceptable to the Treasury Department.

Under the present law it is still true that if inventory costs fall below the level existing at the time LIFO was adopted, the loss is not recognized for tax purposes. The fact that in most instances, companies that adopted the elective

method in the early stages have such a large cushion between present costs and those obtaining at the time they made their election that the possibility of prices falling below the floor is now remote, is no consolation to companies who are now considering whether or not the adoption of LIFO is feasible for them. At the present time there is agitation to change the tax laws to permit of inventory valuation on the basis of LIFO or market, whichever is lower, and while such a change may not have the blessing of the Treasury Department, it does have some support.

The LIFO Basis

The tax law provides that the amount of inventory on hand in any LIFO classification at the time the method is adopted represents the initial LIFO base stock, and at this time, if any market writedowns have been made in this inventory, they must be reinstated in the LIFO cost. At the end of subsequent taxable periods, inventory increases over the base stock in any inventory grouping or classification are to be priced at current costs. Annual decreases in each classification are applied to the most recent increases, and to the extent that aggregate decreases by classification exceed aggregate increases the base stock is lowered for subsequent periods.

During the last war and for a period thereafter, and again under present conditions, there are and will be many instances of involuntary liquidation of inventory quantities because of shortages and not as a result of management decision. The law recognizes this by permitting a taxpayer under these conditions, if he has so elected, to adjust taxable income with the difference between LIFO cost and acquisition cost at the time of replacement. Such difference is allocated back to the year of liquidation and the tax for this year is recomputed. Thus a taxpayer need not pay taxes on inventory profits realized on the sale of base stocks if he elects to replace, and does replace, inventories involuntarily liquidated.

In many instances of financial statements prepared at the close of the year where there have been involuntary liquidations of base stocks of LIFO inventories, provision has been made by a reserve, net of estimated tax benefit, for the estimated costs of inventory replacements in excess of LIFO costs. Interim reports prepared during the taxable year may also include a provision for any voluntary liquidation of base LIFO stocks which are to be replaced before the end of the year.

LIFO Methods

The LIFO method of pricing inventories requires a matching of the



"Not only are we canceling part of your last order, but also most of your future orders."

beginning and ending inventories. It was originally believed that a physical identification of commodities was necessary. In electing to adopt LIFO, a taxpayer's application specified with particularity the goods to which the method was to be applied, and specific goods in the closing inventory were matched with similar goods in the opening inventory. A taxpayer could limit his election to certain goods in inventory which embraced items of raw materials, or of finished goods, or both. However, when raw materials entered conversion, they became a different item of inventory for this purpose.

The regulations were later relaxed somewhat, and a manufacturer or processor who had elected to adopt the specific goods method was permitted to substitute the raw material method. The latter limits the application of LIFO to raw material only, including the raw materials in finished and semi-finished goods measured in terms of appropriate units. It does not make any difference if raw material changes its shape or identity in the manufacturing process, as long as the amounts therein can be reasonably estimated. Processing labor and burden costs are continued to be valued on a FIFO basis.

This method is attractive in industries where the raw materials represent a major proportion of total costs and/or where processing costs are not subject to large price fluctuations. It reduces the number of groupings or classifications previously considered necessary, and in some cases permits a combination of similar but not identical raw materials in a single group. It does not remove the need for matching goods in the opening and closing inventories by physical identification, although the matching can be done by groups rather than items. Thus the raw material content of goods in process or finished goods is converted to an equivalent raw material unit, and the quantities in each classification at the beginning and end of the year are compared to determine whether there has been an increase or decrease during the year.

In the early days of the administration of the elective method of inventory valuation, the Commissioner held that a taxpayer was precluded from electing LIFO if he was unable to physically match the goods of the ending inventory with those in the beginning inventory and purchases. Department stores using the retail method could not

satisfy these requirements, and the same was true for many taxpayers in other businesses. By agreement, it was decided to test the application of LIFO with respect to department store inventories before the Tax Court in the Hutzler Brothers case. In 1947, the Court ruled in favor of the taxpayer, holding that a physical matching of goods on hand in a given department at the end of the year with goods on hand in that department at the beginning of the year was not required, because department stores had always valued inventories on the retail method by departments, regardless of the items included in such departments which had been accepted for tax purposes. The Tax Court in 1948 held that the dollar-value method approved in the Hutzler case was applicable to inventories of taxpayers other than department stores if proper inventory classifications could be developed.

Record Keeping under LIFO

The regulations now provide that the dollar-value method of inventory may be used by any taxpayer if the Commissioner can be satisfied that its use will properly reflect income on the LIFO basis of accounting described in the tax law. The matching requirements of the statute are satisfied by matching or comparing the dollar values at the beginning and end of the year.

In general, it is important to keep the number of inventory classifications or groupings to a minimum. Under ordinary conditions, it is not difficult to maintain inventories as a whole at a given level, but the mix between items may well vary substantially. In order to maintain the LIFO base, it is necessary that there be no liquidations at the year end in any of the inventory pools or classifications that have been established. For large iron and steel, chemical, and petroleum companies, 30 to 50 groups have been found to be adequate.

In view of the liberalization of Treasury Department policy, it would appear that we may be approaching the time when a more simple application of LIFO may be used for manufacturing inventories, with approval of the Treasury Department.

One reason why many companies have not adopted LIFO has been their belief that it would add materially to the cost of record keeping and require changes in their present methods. Ordinarily, no significant

changes are required in respect of present cost finding methods or records. The LIFO adjustment does not have to be made in present books of account except as a reserve. The amount of this reserve is computed in detail in subsidiary records which form a part of present records. The additional cost of record keeping is therefore confined to that of keeping required supplemental information.

The nature and cost of keeping the supplemental information depends on the circumstances in each instance. There are simple applications covering only one kind of raw material, and complex applications covering all inventories of a company.

The information required to compute the LIFO reserve for one kind of raw material in a manufacturing company inventory would consist of a listing and totalling, from inventory cards or other data, of the quantity of such raw material, by units of measurement, in the raw material, work in process, and finished goods inventories.

Under the elective method, the inventory cost would consist of the amount of such raw material, measured in units, multiplied by the cost thereof at the time the method was adopted. Any increment over the LIFO base at the beginning of the year would be costed at current prices, or in such other manner permitted by the regulations. The difference between the dollar amount of the inventory computed in this fashion and the amount determined by the usual costing methods of the company would be placed on the books as a reserve and charged to cost of sales.

Under the dollar-value method, individual items of all inventories valued on the LIFO method would have to be repriced at costs obtaining at the time the method was adopted, with new items priced on a basis described earlier. This frequently involves a substantial amount of clerical work in addition to a necessity of making informed estimates of the base costs of items included in inventories for the first time.

Once the matters of inventory costing have been routinized, companies have not generally complained about the amount of additional work involved, at least as long as the tax savings have been as substantial as they have been in recent years since the adoption of LIFO has been permitted for tax purposes.

SERVICE—WITH A SMILE

By Ragnar Montin

THE other day, I happened to be interviewing a well known purchasing agent who had just been presented with his company's 25-year service pin. At the simple presentation ceremony, which he had shared with several other "old-timers" of the organization, there had been the usual laudatory comments that one usually hears at such affairs, but even the casual observer could not fail to note the ring of obvious sincerity and enthusiasm in the president's voice as he pinned the emblem on the PA's lapel, and the spontaneous applause indicating that this particular man had a specially warm place in the regard of his associates. I was trying to find the reason.

"I guess it goes back to a decision that I made during my first week on the job," he said. "You see, I'm the first and only purchasing agent that this firm has ever had. I had to start from scratch, and I learned about purchasing on the job. I came here as a production supervisor. The company was relatively small in those days, and the organization was correspondingly simple, but we were growing fast. One day the boss called me into his office. He told me that he had decided to set up a purchasing department, and that I was it.

"What I didn't know about purchasing in those days would fill a good sized book, so I asked him for further instructions. 'Just remember that purchasing is essentially a service function,' he told me. 'And that's what we're going to expect from you—service. Make it as good as you can.'

"We had some other service departments already in operation, and I ran right smack into the kind of service that they offered. Maybe it was because I was acutely service-conscious because of that conver-

sation that I promptly made some mental notes.

"For example, we have a control laboratory. Among other things, they are supposed to check on the quality of materials received and to pass on new material samples submitted by suppliers. I asked them to make a test. First they argued, then procrastinated until the salesman began to lose interest and I was put in a very embarrassing position with a man who was really trying to help me. Finally I got a report on the sample; they had fulfilled the letter of the request but that was all—no more information than was absolutely necessary on the routine form—take it or leave it. Meanwhile I got other routine test reports on deliveries—after we had been forced to put the materials into production. I put this down in my book as poor service, not because of any lack of ability on their part, but because of their attitude.

"On the very first day, we ran out of two factory forms. I called the mimeographing department. The kind of service I was able to give would depend on the service that I could get. I was pleasantly surprised. The foreman asked how soon they were needed, and whistled when I told him, 'Right away.' But he cheerfully remarked that he would do the best that he could. Within two hours, a messenger arrived with a small package of each of the forms, the ink scarcely dry. It had been necessary to turn the department upside down, almost literally, to get out the emergency order, but the foreman had accepted it as a challenge and came through with a big grin of satisfaction at being able to meet it.

"We have a reasonably large technical library, as business libraries go, in charge of a girl trained in the public library system

of our city. As you may imagine, I had occasion to call upon her frequently in the early days, before our own departmental records were set up, for assistance in locating the information I needed. I found her to be efficient and cooperative. She made you feel that you were conferring a favor on her in asking her to help. Among other things, I asked her for whatever literature might be available on purchasing. It was not surprising to learn that this was a sector in which our reference facilities were deficient, since purchasing then was a brand new department. But I received a prompt report, and within forty-eight hours she had compiled a list of the most pertinent books and periodicals for my consideration and helped me to set up a 'desk library' that has been exceedingly helpful, besides helping to fill the gaps in the catalog file and to organize it for quick reference.

"With the maintenance department it was a different story. It took three telephone calls—a simple request, then pleading, and finally getting rather nasty—to have a burned-out lamp bulb replaced. No explanation, no promise, no action. Eventually it was done, grumblingly, with the inference that I was personally responsible for the lamp failure and that the whole performance was a prime nuisance and a chore.

"That's the way I learned about service. I will not deny that there was a strong temptation to repay service in kind when it came my turn to procure supplies for these various departments. However, I had the good sense to see that service consists of two basic elements—performance and attitude. And I resolved that the purchasing department would have the attitude that I had found in the print-

ing and library departments. I would try to give service efficiently and cheerfully. As my department grew, I made it a point to impress each new person on the staff with this attitude. I found that a good example was the best teacher, and that has helped to keep me on my toes when our own problems get rough and when the demands on purchasing sometimes seem unreasonable.

"Consequently, we always try to take care of all requests, and to do it cheerfully. When the production department gets into a jam and phones to say that they are about to run out of a certain material, we try to get a line on some local stocks that might be available, and that effort is under way by the time their receiver gets back on the hook. Later on, we try to find out how that situation was permitted to develop and work with production to prevent a recurrence.

"When some one in the office needs information on costs of certain new materials so that they can work out costs with the sales department, we do our best to get it for him the same day. If it is a question that requires more time, we report back to him anyway, and he knows that we are working on it.

"When a clerk in the stores department slips up on the low point of a stock item and puts us in a jam, we don't bawl him out even though he may need it, and we never embarrass him in front of his boss. We do caution him on the seriousness of such slips. As a result of this policy, we have most everybody in the organization working with us.

"We often seem to be actually making more work for ourselves by making suggestions to the production and research departments on new materials and asking salesmen for advance information on products that are perhaps available as yet only in the sample stage. But we regard this as a part of our service to those departments.

"Our job as a purchasing department is to give service, to make the wheels of production operate as smoothly as possible on the side of incoming supplies. We don't want anyone around here to think of us as a sour-puss, grumbling bunch of order-stallers. And they don't.

"We aren't perfect—not by a long shot, but we are in there trying. That attitude doesn't take the place of performance, but it makes for patience and understanding on

the part of our associates in other departments when the going gets rough, and for appreciation when we come through on a particularly difficult assignment. Meanwhile, the proper mental attitude toward our job makes us accept each new problem as a challenge rather than a chore, and makes these problems a source of fun and satisfaction during our working day.

"We don't limit this attitude to our dealings within our own plant and organization. It applies to all of our activities—for example, to our reception of salesmen. We treat the representative of our local stationery supplier and our biggest raw material supplier just alike. We don't have fixed calling hours. If it happens to be inconvenient to see the salesman from a local concern at the time he calls, we tell him why and try to arrange some mutually convenient time for a future appointment. For the caller from out of town, we make it a rule to give him some kind of an interview—the best possible attention under the circumstances, no matter how inconvenient to ourselves, to conserve his time.

"We don't believe in trying to impress sales representatives by keeping them waiting in the lobby. We do believe in giving them a prompt and courteous reception, and whatever time may be necessary for a complete sales presentation. If we are not interested in their product, we don't stall, but tell them so as frankly and kindly as possible, with the reasons. On a competitive proposal, we let the

unsuccessful bidders know of our decision, as well as the successful vendor, and keep the door open for them to try again. Obviously, we can't buy from everybody, but we can make the effort to leave everybody convinced that he has received full and fair consideration, even though he didn't land the order. We can build up that confidence and maintain the friendly relationship that is so essential to maintaining dependable sources of supply.

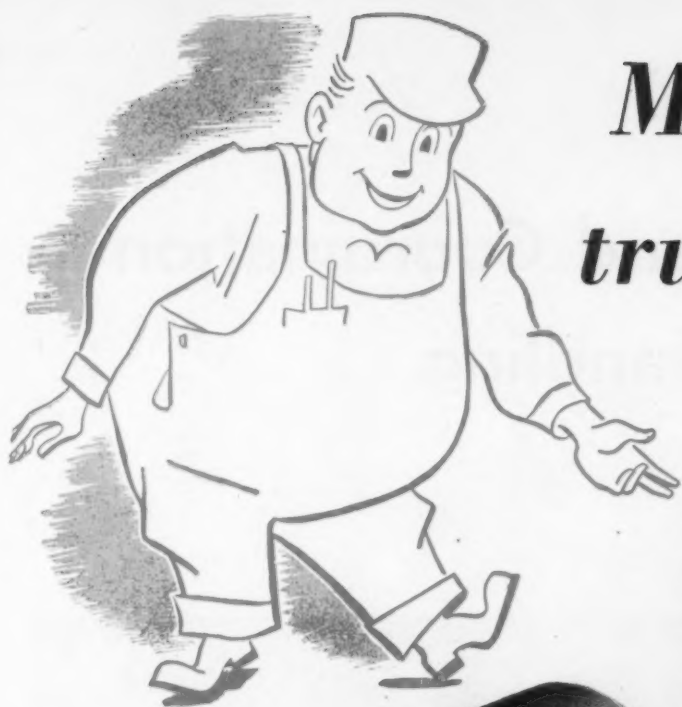
"We believe that we reap a definite benefit from this policy from the standpoint of service on our own orders. Don't forget that, as a purchasing department, we are constantly seeking service, too. I am confident that 90% of those with whom we do business would go out of their way to help us out of a jam and give us a break when supplies are scarce. As a matter of fact, many of them have proved it, and that has been of substantial help in maintaining our own record of service to our company. It is a dividend on our attitude toward them."

Just then, the telephone interrupted. The P.A. listened attentively, making some quick pencil notations on a handy pad. "We'll get right on it, Jim—have a report for you by 4 o'clock," he said, and hung up the receiver.

"Here's trouble," he volunteered, cheerfully. "A drum of chemical has failed to pass tests, and we'll have to scratch around in a hurry to find some more and get it in. Will you excuse me now?"



"Hope you had a wonderful vacation. We sure did miss you around here."



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Pre-Planning and Coordination in Materials Handling

By H. H. Slawson

SUMMARY: There are many cost-saving opportunities in the mechanization of materials handling, but management frequently overlooks the impact of a decision made independently in one department upon related activities and cost-saving opportunities in other parts of the organization. Cooperative planning to develop an adequate over-all system brings the best results. Here are some check lists of questions to be considered in relation to inventory control, receiving inspection practice, purchasing, and traffic. For best results the short term or cost reduction idea on the production floor must fit into the comprehensive master plan.



Mechanization for cost reduction may be only partially effective unless the problems and plans of all departments are given consideration.

MATERIALS handling may seem to be a subject far removed from purchasing policies, but W. J. Dernberger of the Ford Motor Company insists that there is a very intimate relationship, on which the effectiveness of any factory materials handling system hinges. Traffic, receiving, inspection, inventory control, and production departments are also concerned, and pre-planning is the key to development of an efficient and well integrated system.

Mr. Dernberger, who is supervisor of materials handling in Ford's metal stamping department at Dearborn, presented his ideas at the fourth annual conference, sponsored by the American Materials Handling Society, at Chicago last

May, in a paper on "The Relationship of Materials Handling to the Other Departments of Your Business."

"Management," he said, "has been slow to visualize the potential of increased handling productivity through the cooperative effort of all departments of the business, rather than through direct contributions of each department separately. One of the reasons for this is the tendency to concentrate on better methods through mechanization within each department's operation."

There is no denying the substantial lowering of production costs obtainable through mechanization. But materials handling costs, he declared, are so complex that total handling costs do not always

lower under the impact of mechanical investment.

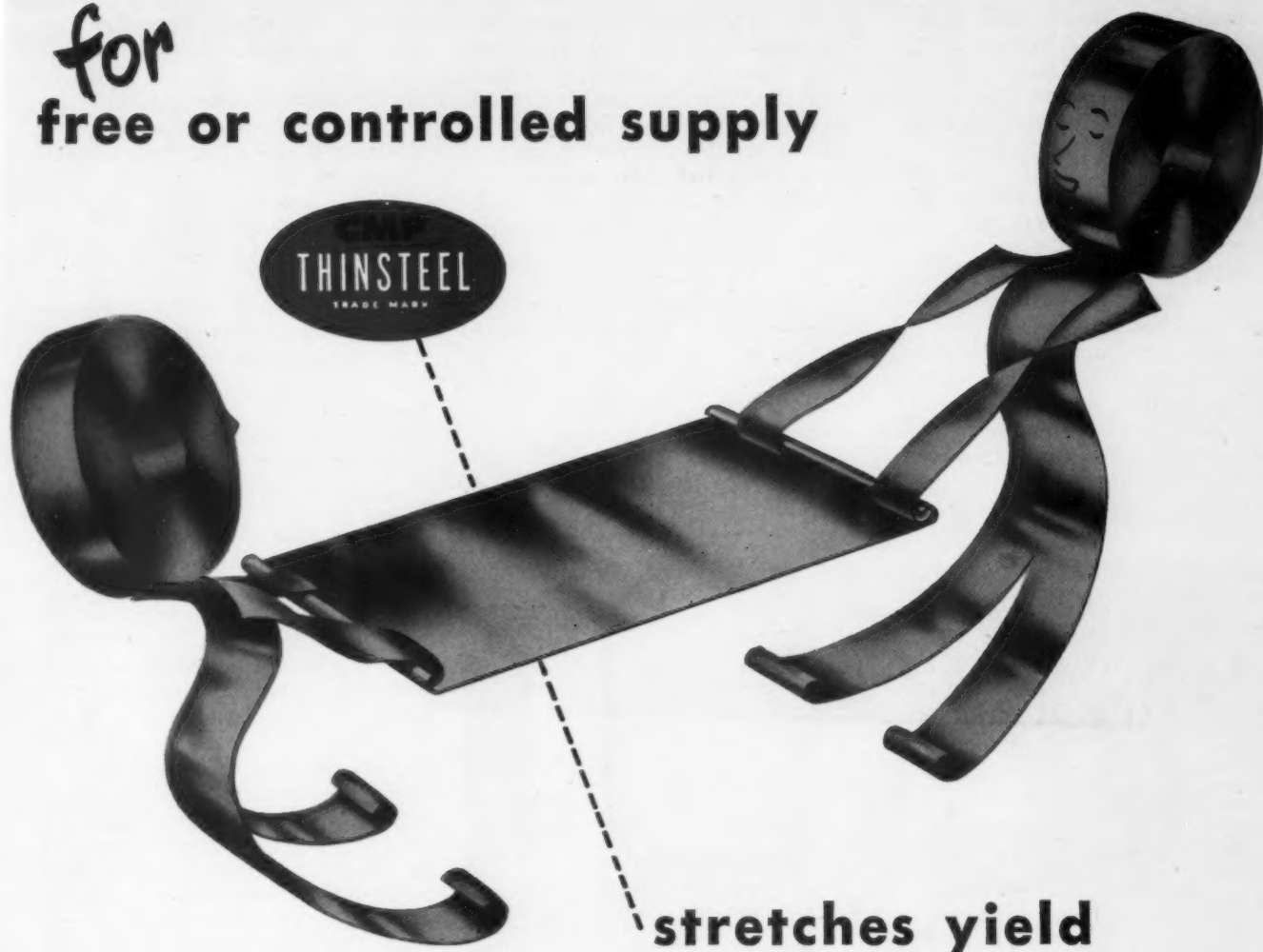
For example, there is the factor of inventory control, as planned for "lot" or "quantity" programming, for use in buying, sales, and production schedules. The answers to a few key questions provide an opportunity to plan the materials handling operation for more effective use of facilities and better service to the departments involved.

What is the minimum and maximum extent of floats or banks of materials?

Are they figured in dollar volume? If so, what does that mean in bulk commodity?

Do inventory plans recognize established unit-load practice? If so, the average quantity lots must be in

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commodity quantities, not in days', weeks' or months' volume.

What are the shipping release quantities given to vendors? Do they recognize the established unit-load practice?

Are the schedules of shipments in recognition of the need for averaged receipts per day, per week, per month?

What are the plans for disbursements to use points? Are they based on replacement quantities with consideration for unit-load practice?

Receiving inspection practice raises another set of questions.

What are the plans for handling through a separate inspection area?

Will there be a requirement for

plans." The agreed plan represents the capacity of the materials handling facility to operate effectively and at a low cost level. Overloads to any established facility, he pointed out, result in confusion, poor effectiveness, and high costs.

There are also some questions directly relating to purchasing terms and vendor selection:

What type and scope of shipping facility does the vendor have? Can he ship via either rail or truck?

Can he commercially unit-pack? Can he, if desired, ship in unit-loads, expendable dunnage, returnable containers?

Can we obtain the specific commercial pack the vendor will use as

transfer unit-loads, expendable or non-expendable?

Is the carrier in good repute as to "en route" damage claims?

Does the carrier have modern facilities which allow heavy industrial truck entry?

What are the "terminal time" policies of the carrier?

"Questions like these are sound," Mr. Dernberger insisted. "They represent individual items of materials handling effectiveness and costs, even though some of them may appear infinitesimal when considered alone." But the right relationships to the plants materials handling activity, he suggested, are best pictured in the mutual recognition of the issues noted and in the ability to provide firm forecasts or data which can be worked into a comprehensive materials handling plan.

The fundamental issue of the over-all relationship, he emphasized, is "the drastic need for more and better materials handling pre-planning." The basis of a good relationship, insofar as any particular department is concerned, is a mutual understanding of issues affecting all departments—a mutual desire to recognize those issues and to work out compromises and agreements wherever the nature or capacity or effectiveness of the materials handling facility is in question.

"The relationship, as considered in the light of these questions," he said, "would indicate that the materials handling operation can help other departments hold to their plan of operation, almost in direct relation to the opportunity of incorporating that particular plan of action into the materials handling program. If the 'other' departments' plans are not known, or are poorly forecast, the materials handling operation will undoubtedly prove a stumbling block. If they are known and forecast in detail, then the materials handling operation should be capable of successfully accomplishing its part of the assignment.

"There are some who may take issue with our emphasis on planning, rather than cost reduction. We would take the liberty of indicating that there is no basic difference. This we say because we are agreed that both short and long term plans are necessary in any business. The short term or cost reduction idea must fit into the long term master plan. The answers to the questions here advanced will provide the basis for cost reduction as well as for future planning."



The unit load. How will it affect inventory control and scheduling, selection of vendors, traffic, receiving, and inspection procedures?

100%, 50%, 25% or other portion to be rehandled for inspection purposes? What physical facilities will be available for mechanical handling of individual pieces during the inspection operation?

Will it be necessary to tool up the inspection operation for emptying and refilling containers?

Questions such as these bring out the basic relationship between material control and material handling activity. The true essence of this relationship, Mr. Dernberger said, is "the mutual relationship of these factors and questions, the desire and ability to forecast firm plans, and the ability to operate as nearly as possible within the agreed

a part of his f.o.b. quotation?

Will the vendor entertain user's shipping specifications without trying to make an additional profit on them?

The traffic department also enters the picture:

Has the time element of carrier delivery been considered?

Will routings load us with heavy arrivals on some days and light arrivals on others? Will everything arrive at the receiving dock in the morning and nothing in the afternoon?

Can the routing be changed in recognition of the materials handling problem?

Is the carrier able to handle and

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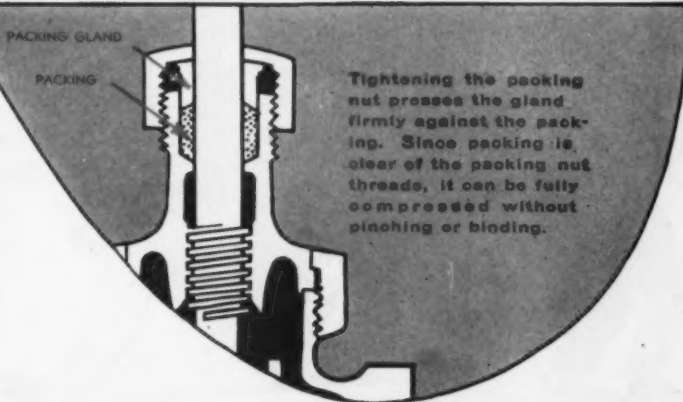
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How Tax Laws Affect Purchasers

By Leo T. Parker

RECENTLY a reader wrote a letter containing the following queries: "What are the legal distinctions between a state sale tax and use tax, as affecting purchasers who sell goods both at wholesale and retail? Also, if a wholesaler sells goods to a retail dealer, is the wholesaler liable for payment of sales tax if the dealer himself consumes the merchandise? What are the legal differences as affecting purchasers between these kinds of tax laws: Sale tax, use tax, excise tax, and personal property tax?"

A "sale" tax law is applicable exclusively to the sale of merchandise, whereas a "use" tax law involves the utilization of purchased merchandise—generally, of course,

facts, as follows: The Alabama-Georgia Syrup Company is a manufacturer of syrup. It buys bottles, cans, and fiber boxes and cartons which it furnishes to purchasers who sell its produce at retail, or otherwise. In other words, the "unit" sold by the company to merchants, jobbers, dealers or wholesalers for resale consists of a container in which are packed the bottles or cans of syrup. The company sells only to wholesale dealers.

The state sued the company to collect "use" tax on the value of the cartons or containers in which it packed bottles and cans of its product. The suit involved several thousand dollars.

fiber boxes or cartons should be regarded as containers. . . . As it is not denied that the fiber boxes are 'furnished', they seem to us to qualify for exclusion from the tax."

The fact is, of course, the containers are not actually sold by either the manufacturer, wholesaler or retailer. Since the containers merely are not in a sense "used" by either the wholesaler or retailer, or consumer, and same are "furnished" for convenience of packing the product, the court held that such containers are not subject to a "use" state tax. This is so although the manufacturer adds to the selling price of the bottles or to the cost of the containers.

What Is Excise Tax?

An "excise tax" is a tax laid on the manufacture, sale, or consumption of commodities, or on licenses to pursue certain occupations, or on corporate privileges.

See *State Board of Tax Commissioners v. Jackson*, 283 U. S. 527. In this case the Supreme Court of the United States held that the power or use of taxation is fundamental to the very existence of the government of the states. However, the restriction that it shall not be so exercised as to deny the equal protection of the laws does *not* compel the adoption of an iron rule of equal taxation, nor prevent variety or differences in taxation, or discretion in the selection of subjects, or the classification for taxation of properties, businesses, trades, callings, or occupations.

For example, in *Ludwig v. Hars-ton*, 197 Pac. (2d) 252, the higher court decided that a tax of 10 cents a pound, imposed on vegetable oleomargarine by the Oleomargarine Sales Tax Law, is a valid "excise tax".



THE COURTS HAVE RULED THAT CARTONS IN WHICH GOODS ARE SHIPPED ARE NOT SUBJECT TO USE TAX

utilization by the retail purchaser. Hence merchandise used by manufacturers in processing salable merchandise, packing their products, etc., is not subject to a state's "use tax".

For example, in *Alabama-Georgia Syrup Company v. State*, 42 So. (2d) 796, the testimony showed

The higher court held that the company need *not* pay "use" tax to the state, and said:

"We consider that the term 'furnished container' has reference to containers which are sold to manufacturers or compounders for use in packing their products. Upon consideration we think that the



Steel saved civilization at Vienna

MODERN history begins with the record of conflict between Christians and Moslems--six centuries of wars that opened with the Crusades and saw the Turks capture Constantinople in 1453.

More than 100,000 Turkish janizaries and cavalry besieged Vienna in 1683. For two months, to quote the diary of an eye witness, "The enemy continued playing their cannon and granadoes. But the city walls were strong, Christian cannon were bigger and more numerous and ammunition more plentiful." Finally came a day when the officer's journal reported, "The enemy did not play their cannon so fast. It was confirmed that they had no great provision of bullets, inasmuch as they shot back not only our bullets, but also pummels of swords and all sorts of iron and stones."

At last a great Christian relief army was assembled. "They made an attack in the best order that ever army did. The enemy, forced always to give back, were put all into confusion. They betook themselves to flight, leaving all their provisions, ammunition, cannons and tents--the greatest part rendered unfit for farther use by our great guns."

Never again did the Turks seriously menace Christendom. Western civilization had been saved once more by its supremacy in the use of iron and steel. To aid our survival America's free private industry is producing steel at the highest rate ever known--and still expanding. The question remains--Will America use enough of this tremendous steel production to guarantee the continued supremacy of Western, Christian civilization?---We believe the answer is yes!



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The court also held that such a tax does not violate a constitutional provision that all taxation shall be equal and uniform. And the law does not violate the state's constitutional provision that no local or special laws involving the assessment or collection of taxes shall be passed.

Personal Property Tax

Personal property taxes affect chattels exclusively. Hence any personal property tax law is void which taxes real property. Nevertheless when not trenching upon the prerogatives of the national government or violating the guarantees of the Federal Constitution, the states have the attribute of sovereign powers in devising their fiscal systems to insure revenue and foster their local interests. The states, in the exercise of their taxing power, are subject to the requirements of the due process and the equal protection clauses of the Fourteenth Amendment, but that Amendment imposes no iron rule of equality, prohibiting the flexibility and variety that are appropriate to schemes of taxation. The state may tax real and personal property in a different manner. It may grant exemptions. The state is not limited to *ad valorem* taxation. It may impose different specific taxes upon different trades and professions and may vary the rates of taxation upon various products. In levying such taxes, the state is not required to resort to close distinctions or to maintain a precise, scientific uniformity with reference to composition, use, or value. To hold otherwise would be to subject the essential taxing power of the state to an intolerable supervision, hostile to the basic principles of our government and wholly beyond the protection which the general clause of the Fourteenth Amendment was intended to assure.

However, as above explained, anything *permanently* attached to real property cannot be assessed for taxation in any state, county, or city as personal property. In other words, all chattels as furniture, electric fans, portable equipment, and the like, when permanently attached to a building lose their personal property character and become real property.

For illustration, in *Taylor v. Willibey*, 212 Pac. (2d) 453, it was shown that county officials assessed real property taxes against a theater building, and also as-

sessed personal property taxes on the theater seats. The evidence established that the seats were permanently attached to the floor of the theater building with bolts.

In view of this testimony the higher court held that the county authorities could not collect personal taxes on the seats and other equipment personally attached to the building. This court said:

"We conclude that the theater seats in question were a part of the realty, and as such were not assessable as personal property."

For comparison, see *Turner v. Spokane County*, 150 Wash. 324. In this case the court held:

"Opera chairs in theater screwed to floor lost their character of personal property, and by reason of their attachment or connection with real property become part thereof, and should have been assessed as such ***."

On the other hand, all higher courts agree that personal taxes may be assessed against chattels *not* permanently attached to real property.

Who Are Subject to Sales Tax?

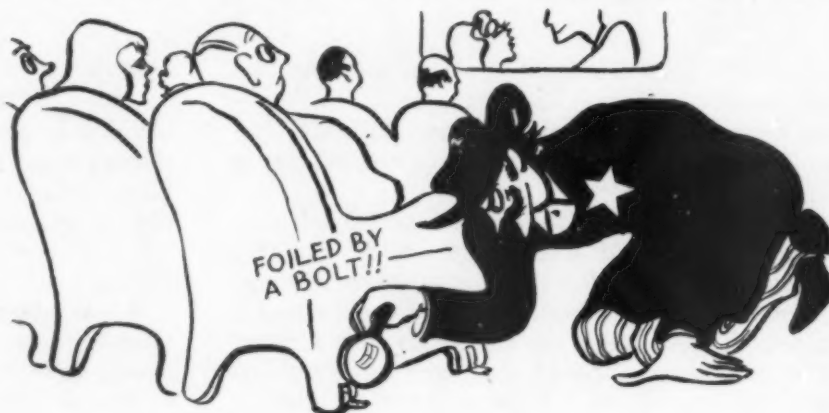
Generally speaking, wholesalers of merchandise need not pay either a state's sale or use tax. However, retailers of merchandise are held

tail automobile dealers. The wholesaler did not charge the state's sales tax to the retail dealers, believing that they intended to resell the accessories.

In subsequent litigation the state proved that the retail dealers used the parts and accessories to repair automobiles in their service stations. The higher court held that the wholesaler must pay the sales tax, plus penalties on these sales.

For comparison, see *Cody v. State Tax Commission*, 177 So. 146. This court held that wholesalers are liable for the sales tax on accessories, solder, paint and similar materials sold to operators of service stations and used in reconditioning their own machinery and equipment.

Also, see *Doby v. State*, 174 So. 233. This higher court held that if the customer operates a retail place only, and is engaged in the business of reselling the goods so purchased from the dealer or jobber, there is no tax on the sale by the dealer to him, although the latter may, *occasionally but rarely*, take from his stock certain of the goods, supplies, and parts and use them on his own equipment or in rendering some desultory service to another. The question controlling on the dealer is dependent upon



SEATS PERMANENTLY ATTACHED TO A BUILDING
ARE REAL PROPERTY, NOT PERSONAL PROPERTY

accountable to the state for both sale and use taxes. Also, according to a late higher court decision, a wholesaler of accessories and supplies is liable for payment of the state sales tax on repair parts sold to retailers who use them for repairs.

For illustration, in *Merriwether v. State*, 42 So. (2d) 465, it was shown that a wholesale dealer sold parts to several licensed re-

tailers. The wholesaler did not charge the state's sales tax to the retail dealers, believing that they intended to resell the accessories.

It may be a part of the business of the customer in the usual course, both to render service and to sell parts out of the stock purchased from the dealer so that when the sale is made, the goods are not

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separated for resale from those which are used in service and which would be subject to the tax on the sale by the dealer to the customer thus dealing with the goods. But the wholesale dealer is bound at his peril when he sells to a customer to know whether the customer is engaged in consuming such goods as a part of his course of business. If so, the sale of them all is taxable, though the customer may also out of the same lot habitually resell some of them to others.

to separate labor costs from the selling price of the merchandise or renders a bill for a single amount which includes both labor and materials.

Specific Use of Merchandise

Modern higher courts consistently hold that a state cannot collect a sales tax on merchandise used "in production" of tangible chattels for resale. This is double taxation. However, a recent higher court held that this rule of law is not applicable to machinery and equip-

The corporation appealed to the higher court contending that the state could not legally collect the sales tax because the equipment was used directly in the production of tangible personal property.

The higher court refused to agree with this contention and ordered the corporation to pay the tax, saying:

"It is difficult to conceive of products the processing of which does not require the transportation of ingredients to the place of processing as well as transportation of the finished products from the place of processing to customers or places of use. The fact that certain items of tangible personal property are required by law in mining operations does not in and of itself exempt or except from taxation the sale or use of such items for such purpose."

Not Manufacturing Machine

According to a recent higher court a motor truck used to mix concrete in transit is *not* a "manufacturing machine", and hence is subject to a state's sales tax.

For example, in *Anderson Sons Company v. Glander*, 92 N. E. (2d) 707, an Ohio state law was passed which provides that no sales tax shall be paid to the state on machinery or materials used by the purchaser in "manufacturing" merchandise for future sale.

A company is engaged in the business of manufacturing and selling concrete mix at retail and wholesale. The ingredients are loaded in mixers mounted on a motor truck chassis and mixed and manufactured en route to the job site.

The company refused to pay the state's 3% sales tax on the motor truck and chassis upon which the concrete mixers are mounted and used to manufacture concrete mix at retail and wholesale.

The higher court ordered the company to pay a total back sales and use taxes of \$6,356.51. This court said:

"It is clear that the truck chassis plays two parts in the operation of the manufacture and sale of concrete. First, it starts the mixer motor which actually begins the process of transit-mix manufacture of concrete. Second, it transports the mixer and its contents to the job site. It is appellant's (company's) position that its manufacture of concrete is a continuous process of operation to the point of delivery. We think that it may



THE WHOLESALE MUST KNOW WHETHER HIS CUSTOMER BUYS FOR RESALE OR AS A CONSUMER

Therefore, responsibility for what is finally done with the merchandise when good faith and diligence are used at the time of the sale cannot be visited upon the wholesale dealer. But he must exercise *diligence* to know the course of business of his customer, and see that the goods sold are delivered at a place where the custom of the business is known to be for resale only, or take the consequences. The latter explanation is particularly true if the customer has two places of business, one retailing directly to consumers, and the other where he uses the merchandise for himself or in his own business. Under these latter circumstances the wholesale seller must charge the purchaser sales tax on merchandise delivered to the place of business where the merchandise is customarily used or consumed by the purchaser, or in his business.

Still another important point of law is that neither a sale nor use tax is applicable to labor costs. Notwithstanding this established law a seller is obligated to pay a tax on the full amount of a bill including labor costs if he neglects

ment used to transport materials or merchandise used in production of tangible chattels.

For example, in *Tri-State Asphalt Corporation v. Glander*, 99 N.E. (2d) 366, it was shown that the Tri-State Asphalt Corporation is in the business of producing asphaltic concrete, known as black-top. The company uses a portable asphalt plant which is moved from job-site to job-site so that the asphaltic concrete may be produced as near as possible to the place of application or use. In connection with the portable plant the company uses a crane which moves under its own power on rubber-tired wheels and has a boom and a bucket, and is similar to a power shovel. The sand and slag used in the production of asphaltic concrete is manufactured both at its main plant and also at the portable plant.

The Tri-State Asphalt Corporation purchased a Wayne crane for the sum of \$17,500. The State Tax Commissioner made a state sales tax assessment against the corporation for \$525 and a penalty of \$78.75, or a total tax of \$603.75 on the crane.



Skillful Molding Creates **ITS NEWEST CABINET MEMBER**

This cabinet which we molded for Zenith's new "Tip Top Holiday" portable is the latest in a long line of plastic cabinets molded by Mills. In shape—size—color—these cabinets have varied as widely as the products for which they were made.

All were alike however in one respect. Each was engineered and molded so that its attractive, sales appealing appearance was matched by sturdy durability.

The fact that we received additional cabinet molding jobs as well as other molding orders from the same clients proves we can be depended upon for top quality every time.

Let us show you today how our unique combination of sound engineering—careful, correct material selection and skillful molding can create a better plastic product for you.

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INJECTION MOLDERS and EXTRUDERS of: Tenite, Lumarith, Plastacele, Fibestos, Lucite, Nylon, Plexiglas, Polystyrene, Styron, Lualin, Vinylite, Geon, Plexene, Polyethylene, Cerex, Forticel, ~~Windsor Plastic~~, Saran, and other Thermoplastic Materials.

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*Cabinet molded for
Zenith Radio Corp.,
Chicago*



Write on your letterhead for the new Injection Molded and Extruded Plastics Catalog. Or, for detailed information about ~~Windsor Plastic~~* piping, tubing and fittings, write for circulars containing data and illustrations.

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CHASE-DESIGNED Pretty Print bags are becoming more and more popular! Housewives want them, demand them! They come in a broad range of colors, and in the newest decorator-approved patterns. Your Chase Salesman has samples. Ask to see them. And be sure to cash in on this nation-wide preference by packing your products in Chase Pretty Prints... America's Favorite Patterns!



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be more properly said that the concrete is actually made in its yard. Its continuous agitation simply keeps it from setting; and the addition of water, when and if needed, simply changes its liquid consistency and not its substance."

Also, in *Saunders Mills Inc. v. Evatt*, Tax Comm'r, 139 Ohio St. 227, 39 N. E. (2d) 526, the court held that motor trucks used solely in transporting agricultural produce over the public roads from the place where grown to establishments owned by the purchaser, are subject to the Ohio sales tax, not being used directly in the production of tangible personal property for sale by manufacturing, processing or farming.

For comparison, see *France Company v. Tax Com'r*, 55 N. E. (2d) 652. Here the testimony showed that a company used motor trucks to transport crushed stone from a stone crushing and screening plant to its yards. The higher court held that these trucks are exempt from the state sales and use taxes.

And again see *Dye Company v. Evatt*, Tax Com'r, 144 Ohio St. 233. The testimony in this case showed that motor trucks were purchased by a mining company to be used exclusively to haul materials to a tippie where they are cleaned and graded for shipment.

The higher court held that the company need not pay state sales tax on these motor trucks.

For comparison see *Phillips & Buttorff Mfg. Company v. Carson* 217 S. W. (2d) 1. Here a Tennessee state law was litigated which exempts from sale tax all materials used for processing articles into tangible personalty for resale where such materials become a component part of the finished product. This question was presented the court: Is coal and fuel oil exempt from taxation when used for generation or steam with which to operate power generators for the purpose of manufacturing articles for wholesale and retail sale?

The higher court refused to exempt coal and oil from state sale taxation. This court said:

"We think that coal and fuel oil, purchased for use by the complainant in operating generators and other machinery, are used indirectly in that they produce steam, which gives power to generators and which in turn set in motion machines of different kinds in fabricating articles to be sold to the ultimate consumer."

On the other hand, the higher courts agree that the terms 'sale at retail', 'use', 'storage' and 'consumption' shall *not* include the sale, use, storage or consumption of industrial materials for future processing, manufacture or conversion into articles of tangible personal property for resale where such industrial materials become a component part of the finished product or are used directly in fabricating, converting, or processing such materials or parts thereof, nor shall such terms include materials, containers, labels, sacks or bags used for packaging tangible personal property for shipment or sale. Hence, industrial materials for future processing, manufacturing or converting into articles of tangible personal property for resale, where such industrial materials become a component part of the finished product or are used directly in fabricating, converting or processing are not included in a state's Sales Tax Act.

The following are examples of industrial materials *not* taxable: All raw materials which become a recognizable integral part of such finished articles; also such materials that are used directly in the processing, converting and fabricating tangible personal property such as solvents, refrigerants, purifying chemical oxidizing chemicals, cata-

lysts, and other chemicals used; also filter cloths, filter papers and other filtering materials.

The courts have gone so far as to hold that transactions involve interstate commerce where goods were shipped from a New York state to a warehouse in Georgia and then distributed to customers in Georgia. Previously the shipper in New York made contracts with purchasers in Georgia to supply a definite quantity of merchandise during the year or term of the contract. Although the goods were stored in the warehouse in Georgia, while awaiting shipment to purchasers in Georgia, the higher court held that the goods were in interstate commerce until such goods were received from the warehouse by the Georgia purchasers.

Orders Assembled

Considerable discussion has arisen from time to time over the legal question: If a seller assembles orders of several purchasers in a state and ships all these orders in a single car to its agent who distributes the merchandise to the purchasers in



COURTS HAVE CONSISTENTLY RULED THAT TRANSPORTATION IS NOT A MANUFACTURING OPERATION

lysts, and other chemicals used; also filter cloths, filter papers and other filtering materials.

The following are examples of materials that *are* taxable: Fuel, either coal, coke, oil or other fuel, used for producing power, heat, steam, gas or electric energy for use in the processing, manufacturing, fabricating or converting of in-

the foreign state, does the seller transact intrastate business in the foreign state?

According to a recent higher court the answer is "No."

For example, in *Rodgers v. Howard*, 219 S.W. (2d) 240, the testimony showed facts, as follows: A traveling salesman of the Camp-

(Please turn to page 312)

New Products Ideas



For additional information about New Products described in these columns, use coupon on this page.

Heavy Duty End Mills



Heavy duty end mills with 2" diameter shanks and fast-cutting helix have been added to Pratt & Whitney's "Hi-Helix" line. The cutters are of rugged design and have ample chip clearance for taking heavy end milling cuts. They are suited also for Kellering, die sinking and similar work. Shanks are of the Weldon type and have two set screw flats for positive drive. Diameters range from 2" to 2½"; length of cut from 4" to 6". The cutters are made of high speed steel with right hand cut and right hand spiral flutes. P&W, Division

Niles-Bement-Pond Company, is at West Hartford, Conn.

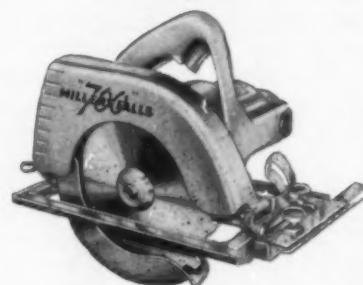
No. 101 — Use Coupon on this Page

Dry Extinguisher With Rubber Hose

Ansul Chemical Company's latest fire extinguisher is a 4-lb. dry chemical unit with a rubber hose. It is easily operated and gives maximum flexibility in fighting overhead and ground level fires. Discharge time has been increased, giving untrained personnel more time to extinguish the fire. Operating range is 12 to 15 ft. The extinguisher has received a B2, C2 rating from Underwriters Laboratories. A self-closing nozzle produces the fan-shaped stream pattern characteristic of the company's hand extinguishers. The nozzle makes the unit weather-tight. When fully charged, the extinguisher weighs 10½ lb. Ansul is located in Marinette, Wis.

No. 102 — Use Coupon on this Page

7" Portable Electric Saw



Millers Falls Co., Greenfield, Mass., says its new 7" portable electric saw is the smallest size saw that will make 45° mitre cuts in finished 2" lumber. It thus provides capacity to handle 90% of all ordinary sawing jobs. It is light in weight (11 lbs.), has a high capacity (2¾" at 90°) and has a fine balance. Maximum safety is assured by a completely guarded saw and instant trigger switch control. A full ½ hp universal type motor supplies ample power for ripping or cross-cutting at full capacity in hard or soft woods. Using abrasive discs, the No. 700 saw is also recommended for cutting metals, concrete, tile, etc.

No. 103 — Use Coupon on this Page

Heavy Duty Beam Scale For "Shock Loading"

A new platform beam scale called the load King is primarily for heavy-duty industrial applications where "shock-loading" is the rule. It is made by The Yale & Towne Mfg. Co., Philadelphia Divn., 11,000 Roosevelt Blvd., Philadelphia 15, Pa. The lever system in the platform is all steel, as are other key

(Please turn to page 130)

READER SERVICE COUPON

AUGUST, 1951

MAIL TO:
PURCHASING—Reader Service Dept.
205 East 42 Street
New York 17, New York

I want more information on New Products Numbers.

101	102	103	104	105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120	121	122	123	124
125	126	127	128	129	130	131	132	133	134	135	136
137	138	139	140	141	142	143	144	145	146		

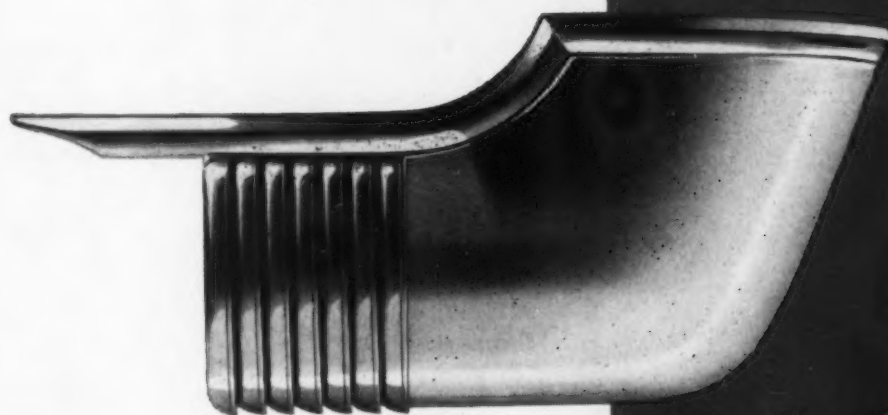
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...in Arabic "A little late is often too late!"
And it's the same in any language... one
little part just a little late can make a whole
assembly line very, very late!

Don't risk production delays by relying on
ordinary air services. Write today for an illus-
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new methods by which EMERY AIR FREIGHT—
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can move your shipments to or from any
hamlet or city in the Country faster and more
dependably. Emery Air Freight Corporation,
Dept. P, 801 2nd Avenue, New York 17, N. Y.

(Continued from page 128)

parts. No wood is used through-
out. Poises on the main bar are
mounted on roller bearings for rapid
positioning. A 100% end loading
platform gives the same reading re-
gardless of the location of the load.
The platform, mounted on outboard
bearings, also absorbs the shock of
moving loads without damage to the
scale. Pit requirements are only
11", resulting in savings on excava-
tion when the scale is installed.
Capacities up to 6,400 lbs.

No. 104 — Use Coupon on Page 128

Sturdy Tool Stand



Stationary or portable models of
this tool stand can be put to good
use around production machines,
mountings for small tools and parts
containers for assembly lines. In-
termediate trays are all interchange-
able and punched for attachment of
drawers. Drawer has a padlock at-
tachment and a sliding tool tray.
Drawer operates on bearing casters.
The tool stand with casters is 37 1/8"
high. Trays measure 20" x 28" and
24" x 36". Made by Lyon Metal
Products, Inc., Aurora, Ill.

No. 105 — Use Coupon on Page 128

Salt-Tablet Dispenser Is Disposable

An expendable plastic salt dis-
penser that can be discarded when
empty is a new product of Standard
Safety Equipment Company, 232
W. Ontario St., Chicago, Ill. The
container is clear plastic so that
complete content is always visible.
It contains 1000 enteric coated salt
tablets which meet Federal speci-
fications for the type tablet. The en-
tire unit is sealed at the factory.
Simplified tablet release mechanism
requires slight pressure from finger.
Easily installed bracket arrange-
ment permits quick removal and re-
placement of container.

No. 106 — Use Coupon on Page 128

(Please turn to page 132)

SPRING WIRE

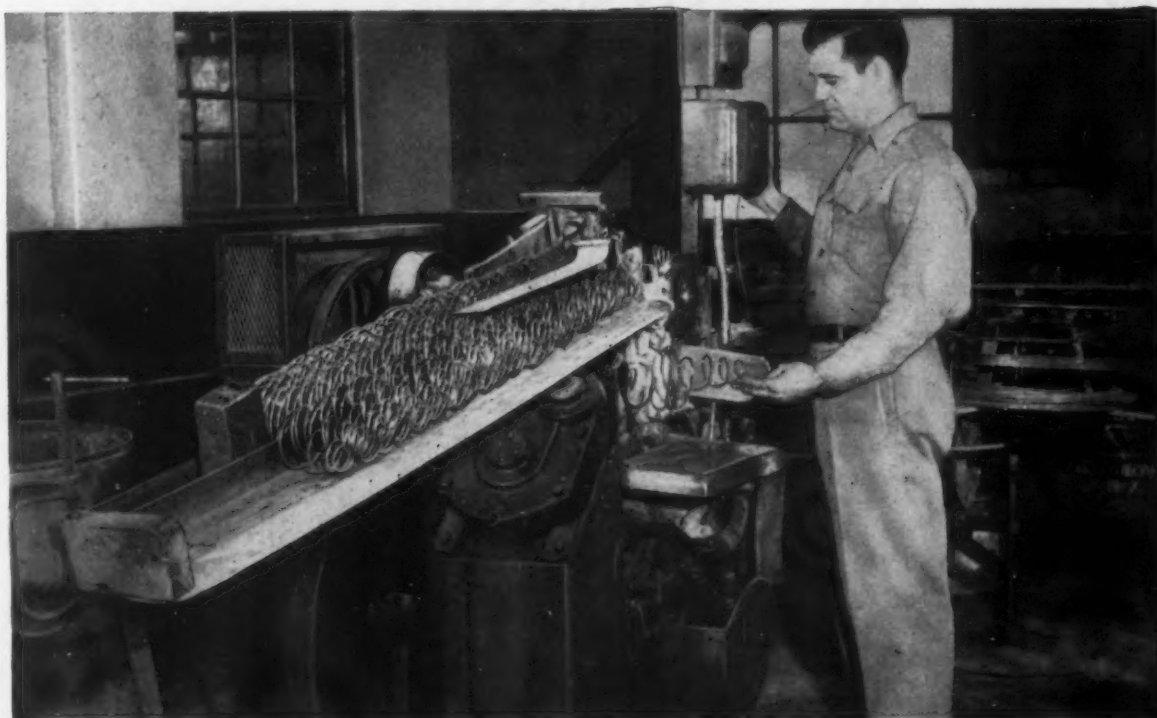
Roebling is one of America's largest manufacturers of specialty wire

ROEBLING MAKES a full range of Spring Wires to meet almost countless purposes. There's upholsterers' spring wire. There's a wide variety of mechanical spring wires, including hard drawn, soft, annealed or oil-tempered M.B., H.B., and Extra H.B. spring wire; music wire, and valve spring wire . . . available in a large range of physical properties and finishes.

And on top of that, from open hearth to finished wire, all manufacturing processes are carried out in Roebling's own plants where positive control assures

highest uniform quality at all times. From end to end, Roebling Spring Wire is identical in gauge and finish, in mechanical and metallurgical properties . . . saves preparation time for users . . . brings faster, smoother production.

Large quantities of Roebling specialty wire are required in today's rearmament program. You can count on us, however, to make every effort to meet your delivery requirements, always. John A. Roebling's Sons Company, Trenton 2, New Jersey.



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Atlanta, 934 Avon Ave ★ Boston, 51 Sleeper St ★ Chicago, 3525 W. Roosevelt Rd ★ Cincinnati, 3253 Fredonia Ave ★ Cleveland, 701 St. Clair Ave, N.E. ★ Denver, 4801 Jackson St ★ Detroit, 915 Fisher Building ★ Houston, 6216 Navigation Blvd ★ Los Angeles, 216 S. Alameda St ★ New York, 19 Rector St ★ Odessa, Texas, 1920 E. 2nd St ★ Philadelphia, 230 Vine St ★ San Francisco, 1740 17th St ★ Seattle, 900 1st Ave, S. ★ Tulsa, 321 N. Cheyenne St ★ Export Sales Office, Trenton, N. J.





Now! **KEX PUTS SAFETY MESSAGES RIGHT INTO YOUR EMPLOYEES' HANDS**

HERE'S AN ADDITIONAL KEX SERVICE that ties in with your *Safety Program*—flashes its messages to the employee right at a place *where accidents happen*. And builds better employee relations.

Now a percentage of KEX® towels have printed on them safety slogans such as—Work Safely—Apply More Caution; Alert Today—Alive Tomorrow; Always Alert—Nobody Hurt; to mention a few.

In these days when skilled hands are so important, KEX puts into them not only a wiping tool that does a faster, more efficient job, but which also helps protect them.

INVESTIGATE KEX NATIONAL SERVICE—the smooth-flowing service that means regular delivery of industrial wiping towels, in any desired quantity, that are hygienically clean, uniform in size, weight and quality, are highly absorbent, and simplify plant housekeeping.

No investment. Nothing to buy. Only a low rental charge per towel. *And your source of supply of KEX safety towels is automatically assured!* Look for your local KEX distributor in your classified phone book. Or write—



"KEX"
* REG. U.S. PAT. OFF.

**NATIONAL
SERVICE**

295 Fifth Ave., New York 16, N. Y.

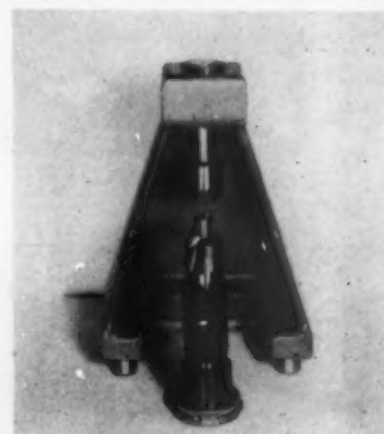
Lightweight Dust Hood



This lightweight dust hood will be useful to anyone working in atmospheres containing heavy concentrations of irritating dust or low concentrations of common industrial gases and vapors. The hood can be used with or without a respirator, since frames and windows are easily interchangeable. It is made of light cotton duck, and a close but comfortable fit is obtained by adjustable neck and under-arm web straps. Extra-large windows of .040" non-flammable acetate sheeting provide ample vision for extra safety. They can be removed without removing frame. Frames are semi-rigid fibre, and can be easily removed by means of snap fasteners. Made by Willson Products, Inc., Reading, Pa.

No. 107 — Use Coupon on Page 128

Pre-Setting Gages Save Up to 80% Set-up Time



Two new gages—the flush pin gage and height gage—will reduce set-up time as much as 80% on multiple-spindle and transfer-type machines, according to Scully-Jones & Co., 1901 S. Rockwell St., Chi-

(Please turn to page 134)

Specify UPSON-WALTON Tackle Blocks



Extra strength at no extra cost

SAFE working loads of Upson-Walton tackle blocks exceed usual safe working loads by wide margins. (See table below.) They are engineered to withstand not only the weight of the load, but hoisting strength as well. In many cases a shackle is not required.

Specify this extra strength—at no extra cost. Your Upson-Walton distributor can serve you from local stocks.

COMPARE THESE SAFE WORKING LOADS!

	Usual Safe Working Load	Upson-Walton's Safe Working Load
3" Single	200 lbs.	265 lbs.
3" Double	300 lbs.	400 lbs.
3" Triple	400 lbs.	540 lbs.
4" Single	400 lbs.	510 lbs.
4" Double	550 lbs.	730 lbs.
4" Triple	700 lbs.	925 lbs.
5" Single	500 lbs.	675 lbs.
5" Double	750 lbs.	1000 lbs.
5" Triple	1000 lbs.	1325 lbs.
6" Single	1000 lbs.	1320 lbs.
6" Double	1500 lbs.	1900 lbs.
6" Triple	2000 lbs.	2640 lbs.
7" Single	1500 lbs.	1700 lbs.
7" Double	2000 lbs.	2575 lbs.
7" Triple	2500 lbs.	3000 lbs.
8" Single	1700 lbs.	2200 lbs.
8" Double	2450 lbs.	2850 lbs.
8" Triple	3200 lbs.	3500 lbs.
10" Single	2600 lbs.	2750 lbs.
10" Double	3400 lbs.	3650 lbs.
10" Triple	4200 lbs.	4900 lbs.
12" Single	3000 lbs.	3000 lbs.
12" Double	3750 lbs.	4600 lbs.
12" Triple	4500 lbs.	5400 lbs.

NOT THIS HOOK — but THIS HOOK

No Upson-Walton hoist hooks are formed by bending. All are drop-forged to size and shape, with substantially heavier section at critical points.

THE UPSON-WALTON COMPANY
CLEVELAND, OHIO

NEW YORK • CHICAGO • PITTSBURGH



when line "feathers" make
the feathers fly...

... Switch to Arkwright Tracing Cloth! You can re-ink clean, sharp lines over any erasure without "feathering" or "blobbing" to spoil your work.

Painstaking Arkwright inspection guards your drawings against pinholes, thick threads or other imperfections—Arkwright quality insures them against brittleness, opaqueness, or paper-fraying due to age. That is why Arkwright Tracing Cloth takes clean, sharp drawings that yield clear, sharp blueprints years after you make them.

Remember: if your work is worth saving, put it on Arkwright Tracing Cloth. Would you like a sample? Write Arkwright Finishing Co., Industrial Trust Bldg., Providence, R. I.

ARKWRIGHT
Tracing Cloths

AMERICA'S STANDARD FOR OVER 25 YEARS



(Continued from page 132)

cago, Ill. They are used for pre-setting drills, taps, reamers, counterborers countersinks and other cutting tools which have been inserted in adjustable adapters before being placed in machine spindles. The flush pin gage will gage distances up to 14½" and may be used also for gaging piece parts. The height gage is equipped with a quick-lock nut which enables the set-up man to adjust and lock the gage on the job. Five sizes gage distances up to 17".

No. 108 — Use Coupon on Page 128

Low-Cost Wet Blaster For Cleaning Metal Surfaces



The Cro-Hone Jr. bench model wet-blaster will give you a surgically clean base for plating or painting and remove all foreign and amorphous substances from metal surfaces, says Cro-Plate Co., Inc. The low-cost machine uses a fine abrasive suspended in a water carrier which is forced against metal parts by air pressure. The unit has no moving parts or circulating pumps, simplifying maintenance. All that's needed for immediate operation is a ¾" air connection and a ½" water connection. Cro-Plate is at 747 Windsor St., Hartford, Conn.

No. 109 — Use Coupon on Page 128

General Purpose Liquid Cleans and Sanitizes

West Disinfecting Company's new odorless general purpose liquid cleaner, known as Sanikleen, cleans and sanitizes in one operation. The odorless liquid combines a quaternary ammonium compound and a compatible synthetic detergent of outstanding cleansing properties. By eliminating the need for an ex-

(Please turn to page 136)

WASHINGTON STEEL CORPORATION

MicroRold Stainless Steel

WASHINGTON, PENNSYLVANIA

PHONE: WASHINGTON 5900

T. S. FITCH
PRESIDENT

August 1, 1951

OPEN LETTER TO THE DISTRIBUTORS OF MICROROLD STAINLESS STEEL SHEETS

The current demand for Type 430 sheet is certainly a tribute to you distributors, and we want to take this opportunity to thank you for a job well done.

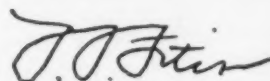
Because there is not sufficient nickel we asked our distributors, in July 1950, to explore the practicability of substituting Type 430 straight chrome stainless steel. While it is recognized that Type 430 is not a "cure-all", there are many applications where it does adequately provide the required corrosion resistance and other desirable characteristics.

We also wish to reassure you that we shall endeavor to allocate our production in an equitable manner.

TSF:HH

Cordially yours,

WASHINGTON STEEL CORPORATION



T. S. Fitch
President

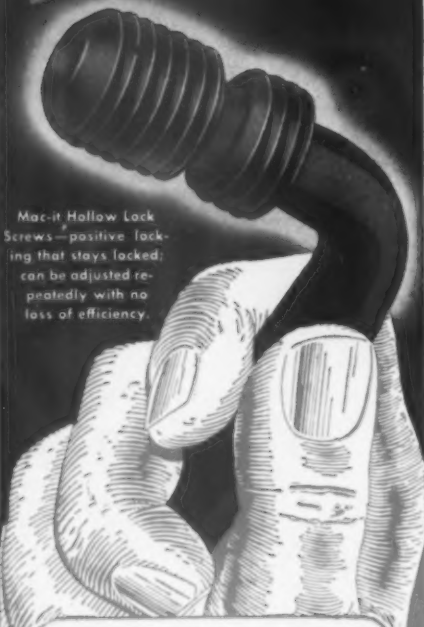
PS.—You are aware of the fact that the government regulations require us to supply 40% of our production for Defense Uses; this obviously means that we cannot provide as much tonnage for non-defense purposes as we used to provide, nor as much as we would like to provide, at this particular time.

T. S. F.



IT'S A

Mac-it
PRONOUNCED
"MACK-IT"



Mac-it Hollow Lock Screws—positive locking that stays locked; can be adjusted repeatedly with no loss of efficiency.

BUILT FOR STRENGTH!

For the toughest kind of fastening jobs, the complete Mac-it line of heat-treated, alloy steel screws will give you the strength you need *where you need it!*

Mac-it's 38 years' experience in the manufacture of these top-quality fasteners is your assurance of precision, uniformity and strength. Sold through leading industrial distributors from coast to coast and in Canada.

Other Mac-it products include:

- Socket Head Cap Screws
- Hollow Set Screws
- Stripper Bolts
- Hollow Pipe Plugs
- Socket Screw Keys
- Square Head Set Screws
- Hexagon Head Cap Screws
- ... and many others

Manufactured Nationally Since 1913 by
STRONG, CARLISLE & HAMMOND COMPANY
Cleveland 13, Ohio

(Continued from page 134)

tra, separate sanitizing rinse, it makes possible considerable savings in time, labor, and materials. Equally effective in hard or soft water, it leaves no residual soap film. It can be used on walls, windows, dishes, glasses, eating utensils, and floor surfaces of wood, concrete, linoleum, asphalt tile, terazzo and similar materials. West is located at 42-16 West St., Long Island City 1, N. Y.

No. 110 — Use Coupon on Page 128

Tote Box Cuts Handling Time on Small Parts



Reduce handling time on many small and medium sized parts, says Charles William Doepke Mfg. Co., Rossmyrne, O., with the Nestier tote box. Transfer time between storage bin and production line can be cut down or eliminated with the boxes. They can also be used for interplant parts handling, and require only 1/6 the space for return of empties as when loaded. Hung from monorail conveyors, they will stay level, with an adapter, even on inclines. When not in use, fifty units can be nested in a 5' stack. Made of heavy, stamped steel, each Nestier is 17½" long, 9¼" wide, has an inside depth of 5½", and weighs 7 lbs.

No. 111 — Use Coupon on Page 128

New Resistors Have Increased Range

Introduction of boron in the making of deposited carbon resistors has given them an increased range of resistance as well as a lower temperature coefficient, according to Wilkor Products, Inc., 2882 Detroit Ave., Cleveland, O. The new resistors also possess greater stability with a lower noise level. With their small aging and low temperature coefficient of 20 parts per million per degree C, the new boro-carbon film resistors are advantageous for high frequency communications and

(Please turn to page 138)



Everybody's happy when I buy Graton & Knight Products



I get more production-power

with Graton & Knight Engineered Leather Belting. They have just the right belting — flat, round, V, Flat-Link — for every drive in the plant.



I get savings on my looms with

G&K-DIXIE

Orange® Line Textile Loom Leathers. They cut shuttle cost, stop kinky filling, reduce downtime. We also use their tapes and aprons.



I get what I want every time

with G&K-INTERNATIONAL Packings — U's, Vees, Cups, Flanges and Specials—in Leather or Synthetic Rubber — also O-Rings and Oil Seals.

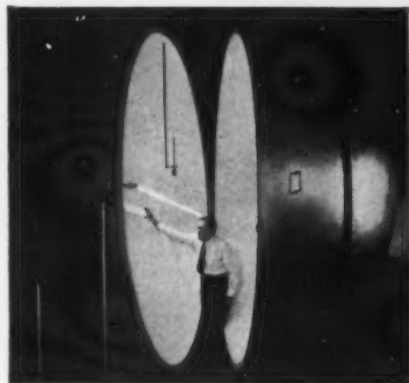


Graton & Knight Company
WORCESTER, MASSACHUSETTS

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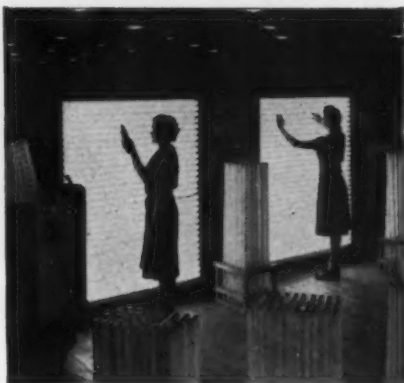
Bristol, New Hampshire
DIXIE LEATHER CORPORATION
Albany, Georgia

5 big advances in G-E fluorescent lamps give you more than ever before!



1. MORE LIGHT

Photometer test shows G-E fluorescent lamps give more light per watt — both when new and throughout life — than ever before, due to a radically improved phosphor. Cost of light is lower.



2. MORE UNIFORMITY

New materials and manufacturing methods reduce variation in lamps. You save money because lamps don't burn out too soon or *outlast* their efficient life, either. Mass replacement is easier.



3. LESS END BLACKENING

You get more light than ever because lamps blacken less near the ends, as a result of using purer materials and more accurate controls.



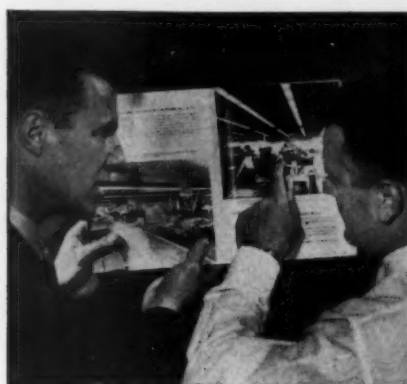
4. LONGER LIFE

Due to improved equipment and processes, G-E fluorescent lamps now last longer than ever before. Accurate tests on life-racks like this prove it. You don't have to replace lamps so often.



5. SHOWS COLORS BETTER

A new phosphor coating makes possible Deluxe Cool White and Warm White fluorescent lamps that show colors as they really are. Use wherever best color rendition is important.



FREE BOOKLET

New guide to better lighting for better production, "Planned Lighting for Industry." Write to General Electric, Department 166- P -8, Nela Park, Cleveland 12, Ohio.

SEE BETTER—WORK BETTER! Modern fluorescent lighting gives a broader, more even spread of light, reduces shadows and glare. In factories, it helps workers see better to work better. Output is increased. Rejects are reduced. Accident rates are cut. Morale is improved.

To get the *most* from fluorescent lighting, use General Electric "5-ways-better" fluorescent lamps, the result of continuous lamp research. Newest form of fluorescent is G-E slimline—world's most modern light source. For new lighting or replacements, call your G-E lamp supplier.

You can put your confidence in—

GENERAL  ELECTRIC

An ounce of prevention

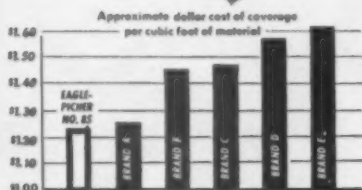
EAGLE-PICHER INDUSTRIAL FLOOR DRY NO. 85

is worth
a pound of cure

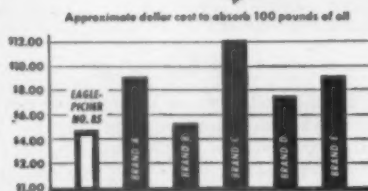
Eagle-Picher Industrial Floor Dry No. 85 is a granular mineral compound—chemically inert, non-combustible, and insoluble in oil, grease, kerosene or water. It can give you positive reduction in operating costs plus greater safety. Write for complete information.

Here's proof that Eagle-Picher
Floor Dry No. 85 is tops in
efficiency, economy

Comparative Coverage Costs



Comparative Absorption Costs



Packed in convenient 50-pound,
multi-wall Kraft paper bags

The Eagle-Picher Company

GENERAL OFFICES: CINCINNATI (1), OHIO

The Eagle-Picher Company
Department P-8-51
Cincinnati (1), Ohio

Gentlemen: Please send me complete
information about Eagle-Picher Industrial Floor Dry No. 85.

Name _____

Address _____

City _____ County _____ State _____



(Continued from page 136)

electronic applications. They are manufactured under license arrangement with Western Electric, and are available in 1/4, 1/3, 1/2, 1 and 2 watt sizes.

No. 112 — Use Coupon on Page 128

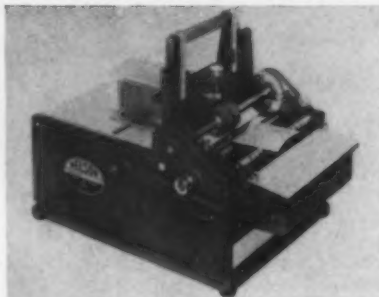
Long Wearing Plastic Gloves Reduce Slipping



The Milburn Company, Detroit 7, Mich., claims its "Rough-Palm" surface plastic gloves not only reduce slipping where oily sheets are handled, but outwear normal plastic coated, leather and neoprene gloves, in the handling of sharp-edged materials. Although for heavy duty, the gloves are light. They are free from skin-irritating properties. Denoted by model number B-2100-N, the gloves are available now only in the knit wrist style. Other styles will be forthcoming. Samples are offered.

No. 113 — Use Coupon on Page 128

Labeler Doubles Output



The Auto Feed Labeler made by Nelson Label Machine Corp., 39 Main St., East Orange, N. J., is said to permit operations at twice the speed of hand fed machines. Labels are friction-fed from the bottom of a stack by tapping one of the two actuating levers. A label is picked up and carried over the glue feed roller. A retard finger, adjustable for the thickness of a label, permits only one label through at a time. Thickness of the glue film is regulated by a glue control knob. Use of the machine is also claimed to give a neater labeling job and a more even distribution of glue.

No. 114 — Use Coupon on Page 128

(Please turn to page 140)

Important SAVINGS

to VOLUME users
of small parts

..like these



SHOWN TWICE SIZE

thanks to
MULTI-SWAGE

If you need small tubular metal parts like these in large VOLUME, Bead Chain's MULTI-SWAGE Process can mean important savings to you.

Much Cheaper Than Solid Pins

Many prominent users of solid pins for electronic and mechanical purposes have cut costs by switching to Multi-Swaged tubular pins . . . without sacrificing strength or accuracy.

Typical Applications—

As terminals, contacts, bearing pins, stop pins, male-female connections, etc., in a wide variety of products such as Business Machines, Ventilator Louvers, Toys, Radio and Television Apparatus, Terminal-boards, Electric Shavers, Phonograph Pickups, etc.

Send part (up to 1/4" dia. and to 1 1/2" length) and your specs for a quotation or write for DATA BULLETIN.

B[®]

THE BEAD CHAIN[®] MFG. CO.

129 Mountain Grove St., Bridgeport 5, Conn.

Manufacturers of BEAD CHAIN—the kinkless chain of a thousand uses, for pull and retaining chains and other industrial uses; plumbing, electrical, jewelry, fishing tackle and novelty products.

THIS ▶



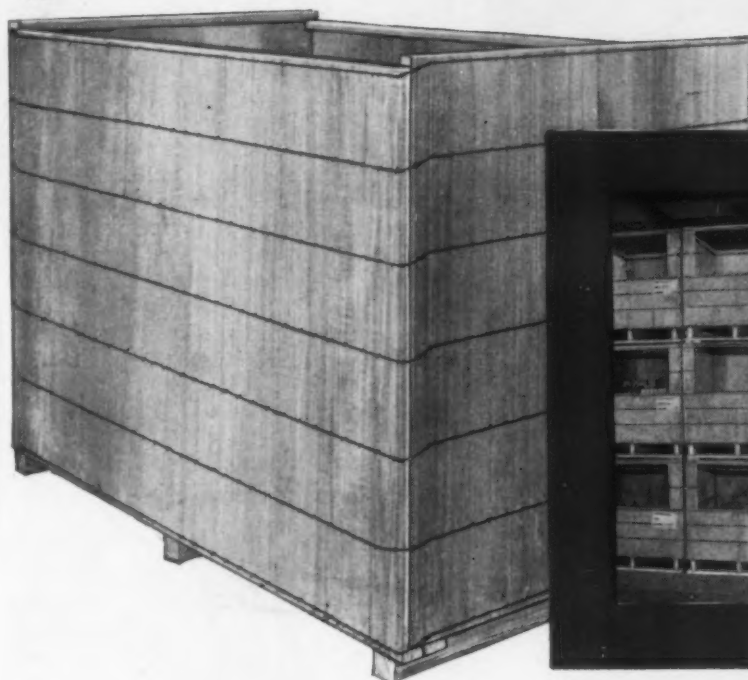
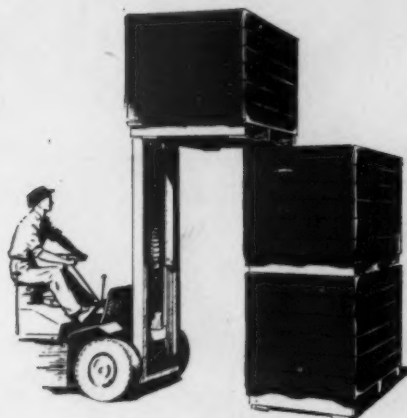
OR THIS ▶



Generalift



pallet boxes



CUT MATERIALS HANDLING COSTS



**REDUCE
STORAGE
COSTS**

- for large business
- for small business
- for ALL business

More and more manufacturers are helping solve their materials handling problems and storage problems with Generalift Pallet Boxes. It's the versatile container that sharply cuts costs . . . and helps step up production . . . because ONE workman, fork-lift truck, and Generalift Pallet Box do the work of many employees. Write us. We'll promptly provide full information on the Generalift Pallet Box, on ANY of our shipping containers.

WE WILL MAIL FREE COPY OF "THE GENERAL BOX"

This colorful booklet illustrates and describes the many advantages of the Generalift Pallet Box. We will be glad to mail upon request.

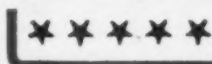


General BOX COMPANY

engineered shipping containers

GENERAL OFFICES:

48 W. Illinois Street, Chicago 10, Ill.

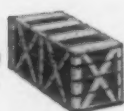


ALL TYPES OF
ENGINEERED SHIPPING CONTAINERS

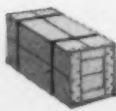
DISTRICT OFFICES AND PLANTS:

Cincinnati, Denville, N. J., Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, Sheboygan, Winchendon, Continental Box Company, Inc.: Houston, Dallas, General Box Company of Mississippi, Meridian, Mississippi

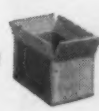
General Wirebound Crate



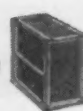
General Nailed Box



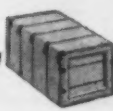
General Corrugated Box



General Cleated Corrugated Container



General All-Bound Box



Generalift Pallet and Pallet Box



General Watkins-Type Box





TIGHT
when assembled



TIGHT
in service



TIGHT
after long service

BEALL SPRING WASHERS

**KEEP BOLTED ASSEMBLIES
permanently TIGHT**

BEALL helical SPRING WASHERS have "live action" and constantly exert tightening pressure over a long range. They compensate for ALL causes of looseness including vibration, bolt stretch, wear and breakdown of finish under the nut and bolt head. **IN STOCK** in all Standard Sizes; made of Carbon Steel, Stainless Steel, Everdur, Duronze, and other metals. Manufactured to the exact dimensions specified by the American Standards' Association.

SPRING WASHER SPECIALISTS for 30 years

BEALL TOOL DIVISION of HUBBARD & CO.

160 Shamrock St. • East Alton, Ill.

Steady Rest for Big Jobs



Patent Pending

For those machining jobs that involve large but not excessively heavy items—pipe, pressure cylinders, pump and engine cylinders, etc.—South Bend Lathe Works, South Bend 22, Ind., has a new steady rest for its 16" and 16-24" lathes. It takes work between 4 3/4" and 10 3/4" in diameter. The steady rest incorporates the improved compound thread jaw actuating mechanism introduced by South Bend two years ago. This construction saves much time by providing quick and easy wrenchless adjustment and locking for the jaws. The steady rest top is hinged for easy mounting and removing of the work.

No. 115 — Use Coupon on Page 128

Spray Gun Pumps Boost Production by 15%



Binks Manufacturing Company's latest pumps for use with spray or flow guns handle all materials from thinners, enamels, lacquers and paints to adhesives, heavy roofing materials, protective coatings, etc. They can be used with guns doing either heavy or fine finishing work. Binks says that by operating directly from original shipping containers they save the user 3¢ to

(Please turn to page 142)

*CONTINENTAL FENCE



KEEP YOUR GUARD UP... DAY AND NIGHT...FOR YEARS AND YEARS

Check the advantages that pay for fence protection. Count the savings from reduced fire risk—lower insurance rates. Add the gains you make by increasing outdoor storage space. Save by letting fence guard your property. Then add the savings you get with Continental Chain Link fence. Only Continental fence is made of KONIK steel containing copper, nickel and chromium for lower protection costs per year of fence life. Plan now to keep a good guard up—and make sure it's Continental KONIK fence—for protection savings . . . for longer fence life.

The Only Fence Made of *KONIK STEEL

KONIK contains copper, nickel and chromium for greater strength and longer life. And, the KONIK fabric is galvanized *after weaving* for even greater protection against rust and corrosion. Only Continental Chain Link fence is made of this better KONIK steel.

*Trade Marks Reg. U.S. Pat. Off.

*Due to present National Defense requirements for nickel and chromium, two critical war materials, Continental Fence at present is available in Copper Steel only.

STEEL MILLS NEED SCRAP BECAUSE YOU NEED STEEL



CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF Manufacturer's Wire in many sizes, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, ALSO, Coated and Uncoated Steel Sheets, Nails, es, tempers and finishes, including Galvanized, Liquor Finished, Bright, Lead Coated, and special wire. Continental Chain Link Fence, and other products,



**"Think of saving
as well as of getting."**

—Ben Franklin's Almanac, 1757

Scrap steel saved today can help steel products come thy way.

—Acme Steel Notebook, 1951

The current shortage of scrap steel makes the supply picture serious for all users of steel products.

Even before this scrap shortage faced the steel industry, increased civilian consumption and increased military needs made it impossible for Acme Steel to meet all the needs of all its 50,000 customers.

So save scrap steel. And, to make the best use of the Acme Steel products available to you, let your Acme Steel representative work with you on ways to increase efficiency, eliminate waste, maintain hard-to-replace equipment in your packaging, shipping and materials handling.

We will continue to help you—the way we have helped our customers for more than 71 years.

Save scrap steel today. Get more steel products tomorrow.

ACME STEEL COMPANY

Dept. P-81, 2838 Archer Avenue, Chicago 8, Illinois

To find out which of Acme Steel's 41 service offices in the United States and Canada is nearest you, check your telephone directory or write us.



1951 is Acme Steel Company's 71st year of continuous operation, and the 50th consecutive year in which we have paid dividends to our stockholders.

ACME STEELSTRAP flat steel strapping and ACME UNIT-LOAD carload bracing BAND, SEALS and TOOLS • ACME SILVER-STITCHERS and ACME SILVERSTITCH WIRE for box stitching • ACME-MORRISON METAL STITCHERS and BOOK STITCHERS • ACME-CHAMPION BAG STITCHERS • ACME HOT AND COLD ROLLED STRIP STEEL • ACME GALVA-BOND steel slat stock for Venetian blinds • ACME STEEL SPECIALTIES, including hoops, corrugated fasteners, barbed box straps, nail-on strapping and other container reinforcements • ACME STEEL ACCESSORIES—snips, tool mounts, reel stands, coil holders, coil trays.

How you can help in the scrap drive.

1. Do a thorough housecleaning job in your shop. Collect all scrap steel, no matter how small.
2. Check your equipment now! Junk all machines worn out or broken beyond repair.
3. Ask your people to do the same job of housecleaning at home.
4. Sell your collection to a dealer in metal scrap. He will see it gets where it is needed.

(Continued from page 140)

6¢ per gallon of material on handling time alone and increase production up to 15%. Used in conjunction with a Binks fluid regulator, the pumps completely eliminate pulsation. Material flow is steady and uniform. Bulletin 700 gives more information. Binks is at 3122 Carroll Ave., Chicago, Ill.

No. 116 — Use Coupon on Page 128

Lift Hooks Speed Heavy Cargo Handling



Neilson Wheel Company's lift hooks for handling heavy cargo have been officially approved by the U.S. Air Force for engine packing cases. Small in size, they are built right into the packing cases as a permanent fixture, preventing damage to case or contents. When not in use, they lie flush with the top of the case. The hooks are designed to lift 20,000 lbs. per set of four, but Neilson says one large company has established the breaking point at 13,000 lbs. per individual hook. Neilson's address is 1614 N. 12th St., Milwaukee, Wis.

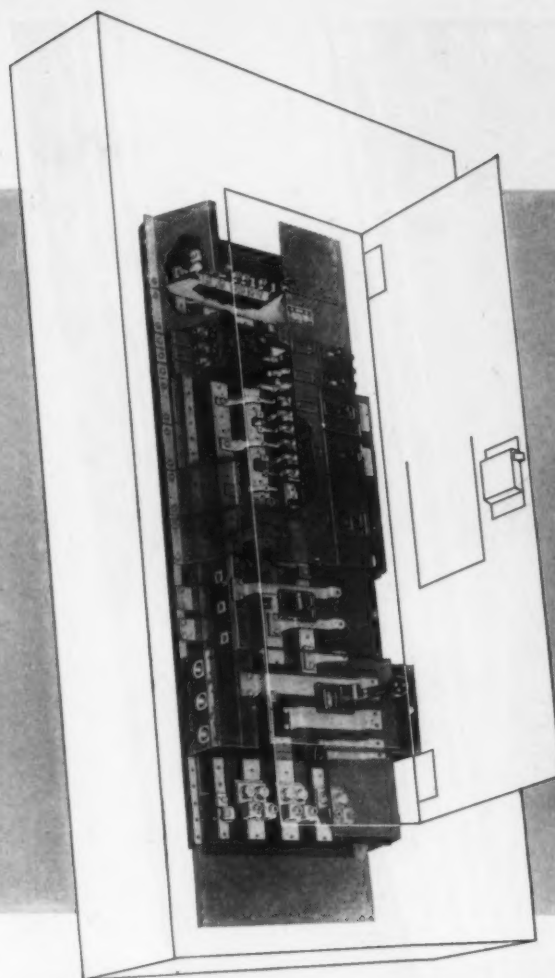
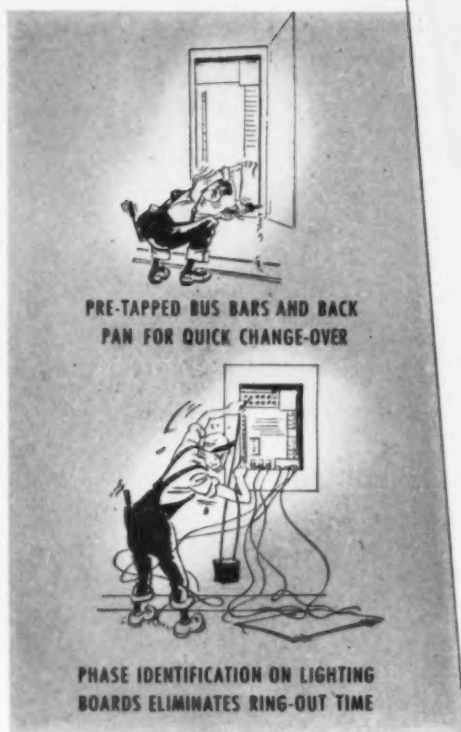
No. 117 — Use Coupon on Page 128

New Foam For Solvents, Petroleum Products Fires

Aer-O-Foam "99", is a new liquid type mechanical foam for use on fires involving polar solvents or petroleum products. The maker, National Foam System, Inc., West Chester, Pa., says tests show the foam will not readily break down or disintegrate on such polar solvents as methyl, ethyl, isopropyl alcohols, esters, ketones and ethers. A blanket of the chemically-resistant foam spreads across the burning fluid, smothering the flames. There is no chance of re-ignition. If the foam mass is broken, it quickly reseals. It also adheres to and insulates all types of surfaces. The foam may be used with existing 6% mechanical foam making proportioning devices.

No. 118 — Use Coupon on Page 128

(Please turn to page 146)



Take an *EXTRA LOOK!*

for cost-saving extras provided by Westinghouse Panelboards

Fast installations cut panelboard costs. Fast conversions for changing or expanding power requirements cut costs. Design—type and accessibility of connections, gutter and wiring space and other features—influences panelboard installation time by as much as 25%.

Here are time-saving, cost-saving extras Westinghouse Panelboards give you:

1. Built-in Neutral Bar Extension on convertible distribution panelboards locates all feeder terminal connections at same end of panel.
2. Pre-Tapped Bus Bars, back pan and other parts provide screw driver convertibility.
3. Indicating Trim Clamps make it easy to get the trim on or off—eliminate guesswork.

Here's some information you'll find useful when purchasing electrical products and services.

J.D.

4. Permanent Pre-Phased Identification—letters at each breaker and main bus identify sequence of breaker and bus connections on 3-phase, 4-wire lighting panelboards.

Quick-fasten access plates, reinforced back pan, interchangeable parts are other advantages provided in Westinghouse Panelboards.

Contact your Westinghouse office or distributor. Or write for Descriptive Bulletin No. 30-930—Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-92014

YOU CAN BE SURE... IF IT'S
Westinghouse

PANELBOARDS





**SPECIFY
AMERICAN
PHILLIPS SCREWS**

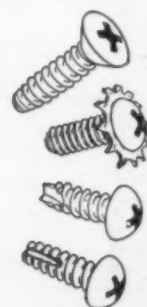
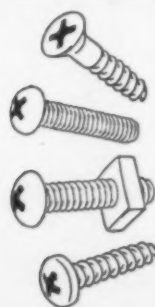


**AMERICAN
SCREW
COMPANY**

PHILLIPS HEADquarters
WILLIMANTIC, CONNECTICUT

Main Office & Plant
Willimantic, Conn.

Office & Plant, Norristown, Pa.
Office & Warehouse, Chicago, Ill.



YOU CAN BE **SURE**.. IF IT'S
Westinghouse

**IT'S NEW!
COMPLETE!
UNIFORM!**

SIZE 0

SIZE 1

SIZE 2

SIZE 3

SIZE 4

Life-Linestarter*

New Dollar-saving Teammate for A-C Motors

- for production-conscious users of motor control
- for cost-conscious executives looking for ways to reduce operating expenditures and inventories
- for machinery manufacturers, who want to offer maximum continuity and ease of service to their customers . . .

plus initial savings in starter installation

plus greater machine salability resulting from compact size, uniform wiring, simplified construction

The new Life-Linestarter is a major advancement in motor control. It's the culmination of 40 years' experience and more than six years of laboratory tests and field trials . . . thoroughly field-proved through wide use under actual operating conditions. It offers more starter per dollar . . . on every count.

Life-Linestarters are best because they offer uniformity and completeness of line . . . uniformity of appearance and construction.

Also check these other features—superior performance, positive operation, ease of installation—found in detail in Booklet B-4677. Ask your Westinghouse salesman for a copy of a Trans-Vision presentation of the new Life-Linestarter. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-92012

*Trade Mark

Here's some information
you'll find useful when
purchasing electrical
products and services.

J.D.

STANDARD ENCLOSURE

Westinghouse
Life-Linestarter



TOMORROW'S STARTER—TODAY!

Over Half of All Top-Rated Firms Use "Speed Sweep"



50,000 FIRMS, including most of the biggest companies, prefer Speed Sweep to all other sweeping tools. Here is proof that Speed Sweep defies comparison. The only better proof is to test Speed Sweep and see for yourself how this better brush sweeps cleaner, faster and easier and outlasts ordinary brushes 3 to 1. Speed Sweep sizes and styles fit all kinds of floors and sweeping conditions. Write today for facts.

Speed Sweep

THE BRUSH WITH THE STEEL BACK



MILWAUKEE DUSTLESS BRUSH CO.

530 N. 22 STREET, MILWAUKEE 3, WISCONSIN

Gentlemen: Please send complete facts about Speed Sweep brushes.

Company _____

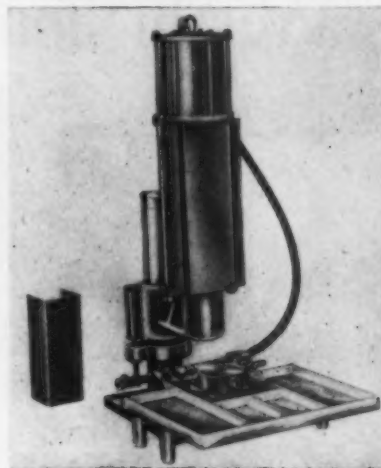
Address _____

City _____

Zone _____

State _____

Bench-type Press For Light Staking, Forming



Model RR-6A air-powered bench-type press for light staking, forming, riveting, punching and similar operations is described as an ideal replacement for "foot" or "kick" presses. It is said to offer safety plus high operating speed without the fatigue characteristic of the older type of equipment. It can optionally deliver as many as 60 spring-powered blows per minute with variable impacts up to 12,000 lbs., or an adjustable air-powered squeeze up to 12 times the air-line pressure. The 10" x 4½" throat accepts large work, and the stroke is adjustable from 1" to 2". Made by Winter Products, Inc., Box 3112, Barnum Station, Bridgeport, Conn.

No. 119 - Use Coupon on Page 128

Diesel-engine Fork Truck Has Fluid Transmission



The first commercially available fork lift truck powered by a diesel engine and equipped with a hydraulic transmission has been brought out by Philadelphia Division, Yale & Towne Manufacturing (Please turn to page 150)



STEEL

THE VEHICLE OF DEFENSE

Without steel there would be little or no movement of men and material . . . there would be little or no defense.

Right now the country needs this master metal as it has never needed it before. Cars, trucks, jeeps—carriers of all kinds—are on order in profusion. Manufacturing schedules have been increased to fanciful figures.

All along the line, from the procurement of raw materials

to the production of ingots and finished steel, those in the steel business have stepped up their efforts to match the tempo of the times and to meet the new requirements.

Weirton Steel Company, pledged to participate in defense measures in any way and to any required degree, is supplying steel on approved allocation to hasten the increase in America's military transportation units.

WEIRTON STEEL COMPANY

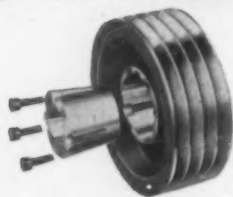
WEIRTON, WEST VIRGINIA

NATIONAL STEEL

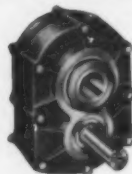


CORPORATION

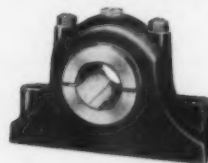
IF IT'S DODGE -IT'S DEPENDABLE!



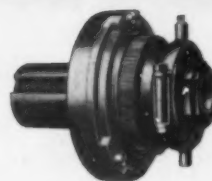
TAPER-LOCK SHEAVES: Patented. Taper-Lock is the world's simplest mechanism for mounting wheels to shafts. Easy on—easy off! 476 stock sizes in A, B, C and D grooves.



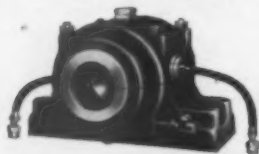
TORQUE-ARM SPEED REDUCERS: America's most complete line of shaft mounted speed reducers. Capacities from 1 to 27 h.p. Output speeds from 12 to 330 r.p.m.



DODGE-TIMKEN BEARINGS: Mounted units, proved in millions of industry's toughest jobs. The famous 30,000-hour line. Four types to choose from. Sizes from 1-3/16" to 8".



ROLLING GRIP FRICTION CLUTCHES: No toggles! Compact, flexible, smooth and **DEPENDABLE**. Bolted plate and gear tooth plate. 1.3 to 21.2 h.p. at 100 r.p.m.



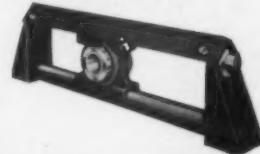
SLEEVOIL BEARINGS: Precision built, exceptionally quiet, thoroughly dependable. "Tops" for fan and blower service. Sizes 1-7/16" to 8" in both plain and water cooled types.



SOLID STEEL CONVEYOR PULLEYS: Maximum strength, minimum weight. Modern pulleys with interchangeable hubs that cut installation cost. Diameters 6" to 8". All face widths.



DODGE SEALED-LIFE V-BELTS: Special protection for tension members insures longer belt life. Perfectly matched to Taper-Lock sheaves for best performance.



DODGE TAKE-UPS: Modern, rugged, dependable. Roller bearing (illustrated), ball bearing and babbitted. Shaft sizes from 3/4" to 4". Travel from 4" to 36".

SPECIALISTS IN POWER TRANSMISSION MACHINERY FOR 73 YEARS

NOTED THROUGHOUT THE WORLD FOR HIGH QUALITY, PRECISION MANUFACTURE

MANUFACTURERS OF A BROAD LINE OF MECHANICAL POWER TRANSMISSION MACHINERY

ORIGINATORS OF NEW AND BETTER PRODUCTS FOR THE MECHANICAL TRANSMISSION OF POWER

USED CONFIDENTLY WHERE THE GOING IS TOUGHEST

DODGE MANUFACTURING CORPORATION, 1300 Union St., Mishawaka, Ind.

CALL THE TRANSMISSIONEER: Most Dodge products are normally available from distributors' stocks—in your territory—when you need them. For information on the newest and best methods of mechanical power transmission, call the Dodge Transmissioneer, graduate of the Dodge factory course. He is your local Dodge Distributor. Look for his name under "Power Transmission Equipment" in your local classified telephone directory.



PILLOW BLOCKS: Roller Bearing, Ball Bearing, Babbitted. **FLANGE BEARINGS:** Roller, Ball, Babbitted. **HANGER BEARINGS:** Roller, Ball, Babbitted. **TAKE-UPS:** Roller Bearing, Ball Bearing, Babbitted. **BASE PLATES. FLOOR STANDS. DROP HANGERS. V-BELT SHEAVES:** Both TAPER-LOCK and Bored-to-Shaft-Size. **BELTS:** Industrial and FHP V-Belts and Flex-Link Belting. **SPEED REDUCERS:** TORQUE-ARM Shaft Mounted Speed Reducers. **CLUTCHES, FRICTION:** Rolling Grip, Diamond D and Solid Types. **COUPLINGS:** TAPER-LOCK Flexible, TAPER-LOCK Rigid and Flange Types. **SAFETY SET COLLARS. PULLEYS:** Steel Split Transmission and Solid Steel Conveyor Pulleys. Rubber Lagging. **VISES:** SLIDE-SET Machinist's... **FOR COMPLETE LINE, TYPES AND SIZES, WRITE FOR BULLETINS AND 224-PAGE CATALOG.**

DODGE

of Mishawaka, Ind.

"First in Power Transmission Machinery!"

Bendix-Skinner

ORIGINATOR OF MICRONIC FILTRATION


the *Finest*

Answer to Any
Filtering Problem




For over twenty years **Bendix-Skinner** has specialized in solving the filtering problems that "couldn't be done." From this experience has come entirely new and exclusive filtering techniques which do even the work-a-day filtering jobs better and at lower long-range cost. Tell us about your problem—nine times out of ten **Bendix-Skinner** filters will supply the "finest" answer.

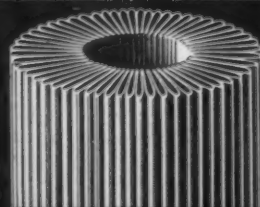
Over 350 Models providing filtration from $\frac{1}{2}$ micron (.000019") upwards at flow rates from 1 to 5000 g.p.m.



Disc-type



Ribbon-type




Pleated-type

SKINNER PURIFIERS DIVISION OF

1501 TROMBLY AVENUE, DETROIT 11, MICHIGAN

Export Sales: Bendix International Division, 72 Fifth Ave., N. Y. 11, N. Y.



(Continued from page 146)

Company. It is specifically for use where fire hazards exist, where there is a limited amount of fresh air, and in outdoor areas where continuous heavy-duty operation is necessary. The truck uses a Hercules 6-cylinder diesel engine with a continuous rating of 70 hp. Fluid transmission assures smooth operation, lengthens clutch life and reduces wear and tear on vital truck parts.

No. 120 — Use Coupon on Page 128

Paper Cutting Rack Uses Slitting Action



A new paper cutting rack made by Unistrut Products Co., 1013 W. Washington Blvd., Chicago, Ill., uses a special tool which cuts the paper by a slitting action across the roll, instead of by the conventional blade method. The rack supports two rolls of heavy or multi-cushioned paper. The unit illustrated is designed for a 60" cutting knife with 48" stroke, but it can easily be adapted to accommodate other sizes by changes in length of certain framing members.

No. 121 — Use Coupon on Page 128

Sealing Tape Meets V3 And W Specifications



"Scotch" brand acetate fibre tape No. 711 is government approved for specification No. JAN-P-127, Type 3 & 4, Grade B & C, for sealing V3 cartons; and for specification No. ANT-12A-T2, GA & B for sealing (Please turn to page 152)

Erie Plans Carefully and Tests Relentlessly . . .



Conference of engineers, production and sales managers over blueprints for new product.



In this cabinet products are tested for non-absorbent qualities with controlled relative humidity up to 100% and at any required temperature.

to Give You the Best in Custom Injection Molded Plastics

ERIE has had longer experience in the field of custom injection molding than any other company. ERIE engineers know their plastics and what can be done with them, and have blazed new trails in molding methods. Every new product is gone over thoroughly and in detail, in the "blueprint stage," and dies are designed for most efficient production.

But even expert theory is not accepted as final proof. Your product is subjected to rigorous testing for the conditions it must meet in actual use, in a laboratory in which every such condition is accurately simulated. Whether specifications call for the withstanding of extremes of temperature and humidity, resistance to warpage, precision of dimensions, or other qualifications, scientific quality control methods and equipment give you assurance that the molded products you receive will be up to every required standard.

One of a series of advertisements describing Erie Resistor's complete facilities for quality custom molded plastics.



In the chamber shown weather is made to order, and products must show their ability to take sub-zero or hottest desert temperatures without damage.

Plastics Division
ERIE RESISTOR CORP., ERIE, PA.
LONDON, ENGLAND • TORONTO, CANADA





We would like to give you
...Mr. Purchasing Agent...
 the exact information you want
 on our hundreds of

Cleveland Container Products.

We offer you
3 Special Folders
 filled with important facts.

No. 1 . . . on our variety of CON-
 TAINERS . . . their uses . . . with quality
 and low-cost advantages.

No. 2 . . . on our ABRASIVE PROD-
 UCTS of approved Carborundum qual-
 ity: NO-LAP Abrasive Belts and Sleeves
 . . . Cleveland Cartridge Rolls. Filled
 with data you will want to have.

No. 3 . . . on CLEVELAND CLEVE-
 LITE* and COSMALITE* Laminated
 PHENOLIC TUBING. Gives endless
 uses in Electronic and Electrical Manufac-
 turing fields . . . a grade for every need.

For money-saving facts and
 time-saving data . . .

**SEND for these three FOLDERS
 today!**

*Trade Marks

The CLEVELAND CONTAINER Co.
 6201 BARBERTON AVE. CLEVELAND 2, OHIO

• All-Fibre Cans • Combination Metal and Paper Cans
 • Spirally Wound Tubes and Cores for all Purposes

PLANTS AND SALES OFFICES: Cleveland, Detroit, Chicago, Plymouth, Wisc.,
 Jamesburg, N. J., Ogdensburg, N. Y. • ABRASIVE DIVISION at Cleveland
 SALES OFFICES: Grand Central Terminal Bldg., New York City; Washington
 Gas Light Bldg., Washington, D. C.; West Hartford, Conn.; Rochester, N. Y.
 Cleveland Container Canada, Ltd., Prescott, Ontario • Offices in Toronto and Montreal

(Continued from page 150)

W cartons. Used for sealing a car-
 ton's interliner and outer seams, and
 for covering and protecting carton
 labels, it is transparent and 6 mils
 thick. The manufacturer, Minn-
 sota Mining and Manufacturing Co.,
 St. Paul, Minn., says it is resistant
 to water, shocks and rough handling.
 It holds tight in all weather, and
 has "exceptional" adhesion to pa-
 per. Made in $\frac{1}{4}$ " to 6" widths on
 72 yd. rolls. Wider widths avail-
 able on special order.

No. 122 — Use Coupon on Page 128

Rubber Frame Goggle Gives Gas-Tight Seal



For protection against gas, fume
 and smoke hazards, American Op-
 tical Company offers a new rubber
 frame goggle, the 701, that provides
 a gas-tight seal. The goggle is made
 without ventilation slots in the
 frame to prevent infiltration of air.
 Headband of the goggle enters slots
 in the outer goggle frame and not
 through a slit in the lens. Screw-
 headed bolts on the front of the gog-
 gle are made of non-corroding
 stainless steel. The goggle may be
 obtained in combination with Amer-
 ican Optical's R2000 or R5000 re-
 spirators. The combinations can be
 supplied permanently riveted to-
 gether or as separate units. AO is
 located in Southbridge, Mass.


No. 123 — Use Coupon on Page 128

New Metal Fastener Strengthens Nailed Joints



Burr-Lock is a new metal fast-
 ener for joining wood and other
 materials, which can be pressed or

(Please turn to page 154)



Inland's interest in your
steel problems does not stop
at our shipping dock.

*"Let's try changing the
blanking direction", said Cliff*

Recently, a large automobile manufacturer was concerned with results of a difficult deep drawing operation . . . the fabrication of steel oil pans. These pans were made from Inland's fully aluminum killed cold rolled steel sheets. For six months, these sheets had been ordered to a thickness of .048" and cut to length 35 $\frac{1}{4}$ " x 43"—and breakage had run to 3.92% of approximately 36,000 oil pans manufactured.

When Cliff Baker*, one of Inland's mill representatives, was given the problem, he suggested changing the blanking direction—inserting sheets in the stamping machine at right angle to the previous direction.

This meant a simple change in the ordering procedure. The customer changed his dimensional specification for these sheets to 43" x 71" so that the direction of rolling and the subsequent direction of steel grain would conform to this suggested practice.

Result: In the following six months, breakage was reduced to 0.75% of 30,000 oil pans fabricated. The number of oil pans scrapped was cut from over 1,400 to approximately 230 in these two six-month periods! INLAND STEEL COMPANY, 38 South Dearborn Street, Chicago 3, Illinois.

**Not actual name*

Your scrap is needed
by the steel industry
for national defense.



gives complete protection from

**ABRASION & SNAGGING • OILS & GREASES • ACID & ALKALINE SOLUTIONS
SALT WATER • NOT AFFECTED BY
EXTREME HEAT OR COLD**

The difference is in the fabric. Sawyer's exclusive "saturation-coating" process not only coats but thoroughly impregnates our top quality base fabrics with 100% DuPont Neoprene Latex. Our Frog Brand protective clothing is not only coated inside and out but all the way through... to give you the toughest, longest-lasting protective wear on the market. Furnished in suits (pants and jacket), long coats, unionalls, with buttons or snaps. Aprons designed for complete protection and comfort. Same styles in Rubberized or Oiled fabrics. Colors: Black or Yellow. Illustrated catalog and detailed price lists on request.

Illustrated above: ¾ length coat.

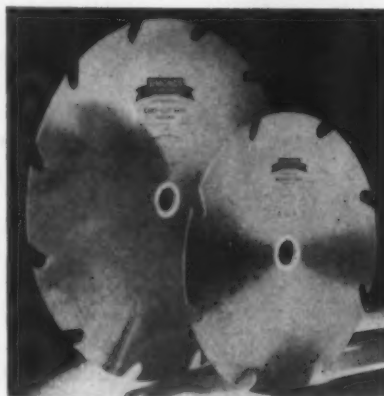
The H. M. SAWYER & SON CO.
Cambridge 41, Mass.

(Continued from page 152)

driven into the material. It can be used with or without nails or glue. Bend tests, according to the manufacturer, Metal Industries, Youngstown, O., show that the fastener will strengthen nailed joints more than 50%. The burr, a steel ring having sharp pronged edges, is placed between two pieces of material. It enters both pieces equidistantly when they are pressed together, even when softwood is joined with hardwood. A special tool is provided for setting of the burr in one piece of wood before joining if this is necessary. The fastener is made in ½", 1" and 1½" sizes.

No. 124 — Use Coupon on Page 128

New Design Saw Minimizes Kickback



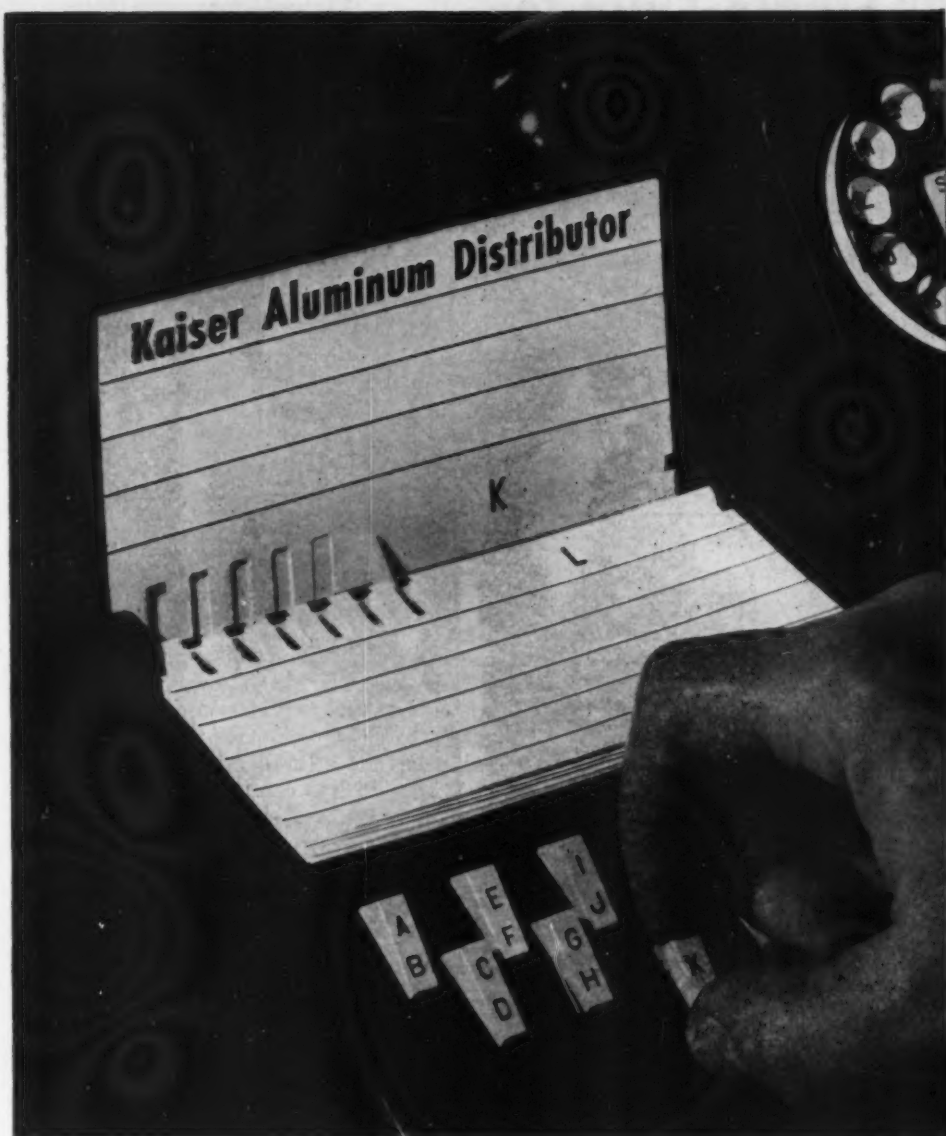
Simonds Saw and Steel Company's new "Easy Cut" saws, designed with relatively few teeth so that each tooth takes a limited "bite", minimizes kickback, consumes less power and is quieter in operation. Best suited for ripping, the saws can be used for rough cut-off and combination work on either table type or radial arm machines. The saws are made from 6" to 16" in diameter with 8 or 12 teeth to the saw, either solid tooth or carbide tipped. Solid tooth saws are for hand feed only. Carbide tipped are recommended for either hand or power feed. Simonds is located in Fitchburg, Mass.

No. 125 — Use Coupon on Page 128

Running-Time Recorder

New running-time recorders made by Bristol Company, Waterbury, Conn., record on a chart the operating or "on" time of production machinery and similar equipment. The chart record gives the total "on" time in hours, minutes and seconds for a given period. "Time off" periods are also shown (Please turn to page 156)

- ATLANTA, Georgia**
Morrison-Drabner Steel Co., Inc.
82-84 Milton Ave., Alpine 4885
- BALTIMORE, Maryland**
Hill-Chase Steel Company of Maryland
6311 Erdman Ave., Peabody 7300
Asheboro, N.C.: Phone 8849
Richmond, Va.: Phone 7-4573
- BEAUMONT, Texas**
Standard Brass & Mfg. Co.
705 Milam St., Phone 4-2641
- CHICAGO, Metropolitan Area**
Korhumel, Heffron & Preiss Steel Co.
2424 Oakton St., Evanston, Ill.
Ambassador 2-6700
- CINCINNATI, Ohio**
Morrison-Drabner Steel Co., Inc.
1074-1084 Summer St., Wabash 4480, 4457
- CLEVELAND, Ohio**
Nottingham Steel Company
W. 45th St. & Division Ave., Atlantic 5100
- DALLAS, Texas**
Delta Metals, Division of
Delta Distributors, Inc.
3201 Oak Lane, Hunter 7446
- DAVENPORT, Iowa**
Nichols Wire & Aluminum Co.
1725 Rockingham Rd., Phone 3-1895
- DETROIT, Michigan**
Cauhorn Distributing Company
9999 Broadstreet, Texas 4-7000
Copper & Brass Sales, Inc.
3000 E. Woodbridge, Lorain 7-3380
- HONOLULU, T. H.**
Permanente Cement Co.
Pier 32, P. O. Box 79, Phone 5-2541
- HOUSTON, Texas**
Standard Brass & Mfg. Co.
2020 Franklin Ave., Preston 1123
- INDIANAPOLIS, Indiana**
F. H. Langsenkamp Company
229 E. South St., Riley 9311
- KANSAS CITY, Missouri**
Industrial Metals, Inc.
410 Southwest Blvd., Victor 1041
- LOS ANGELES, California**
Eureka Metal Supply Company
551 E. Macy St., Mutual 7286
Earle M. Jorgensen Company
10650 S. Alameda, Lucas 0281
Reliance Steel Company
2068 E. 37th St., Adams 6133
- MILWAUKEE, Wisconsin**
KHP Milwaukee Steel Company
4600 W. Mitchell St., Evergreen 4-6000
- MINNEAPOLIS, Minnesota**
Korhumel, Heffron & Preiss Steel Co.
3225 S.E. Como Avenue
Gladstone 4943, Prior 4030
- NEW ORLEANS, Louisiana**
Orleans Steel Products Co., Inc.
1019-1025 Bienville St., Raymond 2116
Standard Brass & Mfg. Co.
2309 Tulane Ave., Aud. 1353
- NEW YORK, Metropolitan Area**
A. R. Purdy Co., Inc.
Page Ave. & Orient Way, Lyndhurst, N. J.
Lyndhurst: Rutherford 2-8100
New York: Chelsea 3-4455
Newark: Humboldt 2-5566
- OAKLAND, California**
Gilmore Steel & Supply Company
1960 Cypress, Glencourt 1-1680
- OMAHA, Nebraska**
Gate City Steel Works
11th & Seward Sts., Atlantic 1830
- ORLANDO, Florida**
Profile Supply Company
P. O. Box 2049, 1601 Atlantic Ave.
Phone 7124
- PHILADELPHIA, Pennsylvania**
Hill-Chase & Company, Inc.
Trenton Ave. & Ontario, Delaware 6-5400
Allentown: Allentown 28077
York: York 5790
- PHOENIX, Arizona**
Arizona Hardware Co., Inc.
First & Jackson Sts., Phone 8-5331
- PORT ARTHUR, Texas**
Standard Brass & Mfg. Co.
KCS & Fourth St., Phone 5-9377
- PORTLAND, Oregon**
Eagle Metals Company
2336 N. Randolph, Tuxedo 5201
- SAN FRANCISCO, California**
Gilmore Steel & Supply Company
840 Brannan St., Klondike 2-0511
- SEATTLE, Washington**
Eagle Metals Company
4755 First Ave. S., Landon 9974
- SHREVEPORT, Louisiana**
Standard Brass & Mfg. Co.
1557 Texas Ave., Phone 2-9483
- SPOKANE, Washington**
Eagle Metals Company
E. 320 Trent Ave., Madison 2419
- WICHITA, Kansas**
General Metals Mfg. Co., Inc.
218-220 S. Wichita, Phone 7-1208, 7-1209



Worth knowing—he's growing!

Your Kaiser Aluminum Distributor is now adding facilities to handle a sizable increase in his aluminum stocks.

For Kaiser Aluminum is expanding its production of primary aluminum by 80%.

As soon as it becomes available, it will mean more aluminum for your distributor . . . more for you!

Meanwhile, remember this: Your Kaiser Aluminum Distributor will assist you in every way possible to obtain defense or-

ders. He will help you specify the type of aluminum your product requires. He can often suggest methods of using aluminum more economically or of converting to more available forms. He can advise you of future availabilities, supply experimental quantities, meet emergency needs.

Equally important, Kaiser Aluminum Warehouse Distributors offer you the cost and service advantages shown in the side panel.

◀ Your nearest Kaiser Aluminum Distributor is listed at the left. Call him TODAY.

Kaiser Aluminum

Setting the pace . . . through quality and service

HERE'S HOW INVENTORY PROGRAMMING HELPS YOU:



MORE VERSATILE INVENTORY—Warehouse stocks give you the opportunity to select from a complete range of alloys and forms perfectly suited to every production demand.



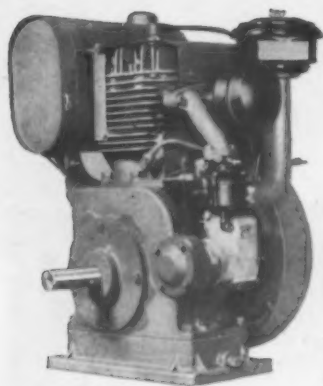
LOWER RAW MATERIALS INVESTMENT—Daily delivery to machine side eliminates tying up your dollars in idle or obsolete inventory; improves your current capital position.



LOWER HANDLING COSTS—Specialization of plant and handling equipment permits machine side deliveries at lower cost than possible in most fabricating plants, cuts stock keeping and accounting costs.



SMALLER SPACE REQUIREMENTS—Space necessary to house your average raw material inventory can be devoted to production. Becomes a source of income rather than an expense.



Four Single-Cylinder **WISCONSIN** *Air-Cooled* **ENGINES** Offering More **POWER** **ADVANTAGE, 6 to 9 hp.**

This series of single-cylinder models have all of the traditional Wisconsin heavy-duty features such as self-cleaning tapered roller bearings at both ends of the crankshaft, rotary-type, high tension OUTSIDE magneto operating as an independent unit, and maximum torque at all usable speeds.

CONDENSED SPECIFICATIONS

MODELS	AEH	AFH	AGH	AHH
Bore - - - - - inches	3	3 1/4	3 1/2	3 3/8
Stroke - - - - - inches	3 1/4	4	4	4
Disp. cubic inches - - - - -	23	33.2	38.5	41.3
H. P. and R.P.M. range - - - - -	3.9 at 1600	6.0 at 1600	7.2 at 1600	7.7 at 1600
	6.1 at 2600	7.2 at 2200	8.4 at 2200	9.2 at 2200
Net weight in lbs., Standard Engine - - -	130	180	180	180

Our engineering department will gladly cooperate with you in adapting Wisconsin Engines to your requirements. Write for detailed data and name of the nearest Wisconsin distributor.



WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46 WISCONSIN

shake hands
with your friends
this **christmas**



CHRISTMAS will soon be here, and you're probably wondering NOW what you can do to send greetings to every one of your business and personal friends in an inexpensive, yet friendly manner.

KAYDON HOLIDAY GREETINGS convey the warmth of your friendship with colorfully illustrated lithographed subjects. All cards are imprinted on the inside with your name and sentiment you choose . . . giving the impression that the cards were made up especially for you.

We'll be glad to send you sample cards for your choice, together with prices from 100 up. Will you use the coupon, please, or your own letterhead.

Mail this coupon for **FREE SAMPLES!**

Kaydon Art Publishing Co. P-8
314 Hyslip Avenue, Westfield, New Jersey
Send me **FREE**, samples of Kaydon Art Christmas Cards, and all information.
Name _____
Address _____
Company _____
City _____ Zone _____ State _____

The
HOBLOK
*When It-
Damn It*
It's set so tight
You pull or push
With all your might.

HOBLOK *Locks It*



HOBBS MFG. CO.

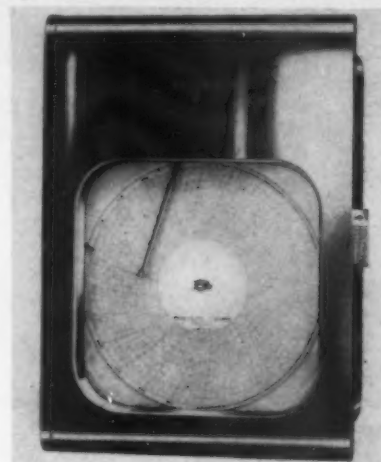
EST. 1882 10 Salisbury St., Worcester 5, Mass.

Manufacturers of:

Loxit Cotter Pins and Tangleproof Lock Washers

(Continued from page 154)

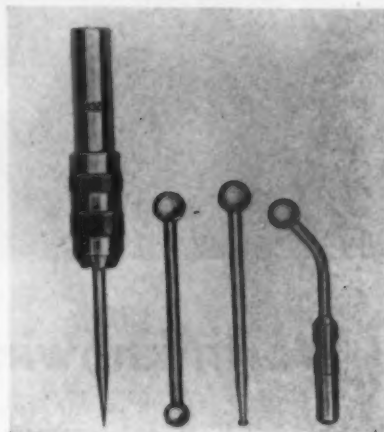
on the chart as well as the time at which they occurred. The recorders magnify the running-time readings in such a way that the total operating time of a machine can be easily



and accurately determined to within a few seconds. They are furnished in models suitable for wall, flush-panel or portable use. Bulletin OP1504 available.

No. 126 - Use Coupon on Page 128

Center Finder Adaptable To Precision Work



The L. S. Starrett Company, Athol, Mass., has provided the familiar "wiggler" or center finder with additional points and attachments which make it widely adaptable to precision work. The attachments are clamped in a shank by a ball swivel joint which permits adjustment to true concentricity or to any angular position. With the sharp point, working centers for jig and tool work or for vertical or milling machines can be quickly and accurately located. The ball contact (ball diameter .250") is useful in locating work. Another contact has a small disc at the end, .100" diameter, which permits use in more confined areas such as slots, shallow holes, etc.

No. 127 - Use Coupon on Page 128

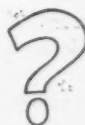
(Please turn to page 160)



Carbon, Alloy and Stainless steel tubes are defined under CMP regulations as "controlled materials". As such, they are critical materials. Not being a mind reader, "Mr. Tubes"—your B&W Tube Company representative—needs a *close* look at the following facts in order to supply the available tubing most economically suited to your requirements.



1 All related CMP authorizations and government contract numbers.



2 Any acceptable alternatives in type, finish, composition, and size.



3 A brief, informative description of your intended fabricating methods.



4 A description of the end-use, exact as to product and its service.

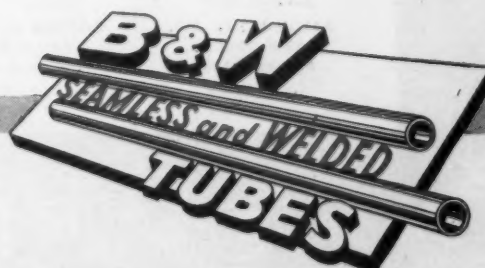
THE BABCOCK & WILCOX TUBE COMPANY

Executive Offices: Beaver Falls, Pa.

General Offices and Plants

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

Sales Offices: Beaver Falls, Pa. • Boston 16, Mass. • Chicago 3, Ill.
Cleveland 14, Ohio • Denver 1, Colo. • Detroit 26, Mich.
Houston 2, Texas • Los Angeles 15, Calif. • New York 16, N. Y.
Philadelphia 2, Pa. • St. Louis 1, Mo. • San Francisco 3, Calif.
Syracuse 2, N. Y. • Toronto, Ontario • Tulsa 3, Okla.

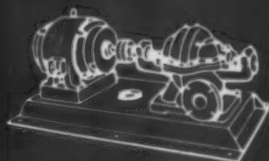


TA-1640-G

FAIRBANKS -

INDUSTRIAL

BUYERS



Split-Case
Centrifugal Pumps



Deep Well
Turbine Pumps



Bladeless
Impeller Pumps



Rotary Pumps



Totally Enclosed
Fan-Cooled Motors



Built-together Pumps

Axial Air Gap
Motors



WHAT

Common source for a long line of uncommonly good standard and special scales, pumps and electrical equipment—that's Fairbanks-Morse. It is a line that offers a double advantage—*depth*, for a broader range of choice; *quality*, attested by the thorough satisfaction of users in every branch of industry. Use this partial listing as a handy check against your particular needs.

ELECTRICAL EQUIPMENT

Alternators

AC generators, revolving armature, type TG.
AC generators, revolving field, types TG & TGZK.
AC generators, revolving field, slow speed engine, type TGZO.

Axial Air Gap Motors

Polyphase open
Polyphase enclosed
Single phase

Direct Current Generators

Standard types.
Open ball bearing type

DG high speed.

Open sleeve bearing type DGZB high speed, $\frac{1}{2}$ to 30 KW.

Open engine type DGZO, low speed, $\frac{1}{2}$ to 300 KW.
Partially enclosed marine type DGZM, $\frac{1}{2}$ to 300 KW.

Direct Current Motors

Standard types

Motor Generator Sets

Induction and synchronous, single & polyphase
Vertical induction polyphase

Polyphase Induction Motors

Standard open type, squirrel cage.

Totally enclosed, non-ventilated, squirrel cage.
Totally enclosed, fan cooled, squirrel cage.

Explosion proof, fan cooled, squirrel cage.

Special duty, squirrel cage.

Multi-speed, squirrel cage.

Constant torque, variable torque and constant hp. types, 2-speed, 3-speed and 4-speed single winding and double winding.

Also offered in a wide range of mechanical modifications, such as splash proof, totally enclosed fan cooled, vertical, etc.

Gear Motors

All-motor types and type "D" Motorgears, with Axial Air Gap motors.

Textile Motors

Wound Rotor, Slip-Ring Motors.

Vertical Motors—Solid Shaft.

Vertical Motors—Hollow Shaft.

Single Phase Motors

Repulsion start, induction run motors.

Vertical hollow shaft motor.

Vertical solid shaft motor.

Synchronous Motors

High speed Types T and TZB.

Engine-type low speed Type TZO.

PUMPS

Base-mounted centrifugal pumps.

Built-together centrifugal pumps.

Centrifugal fire pumps.

8-Cover side-pot duplex power pumps.

PUMPS

Deepwell Duplex

Frame pumps

Horizontal pumps

Paper Rotary

Sewage—horizontal

including "non-

types. Split-

Two-stage pumps

Two-stage pumps

Vertical pumps

Vertical pumps

SCAL

Abattoir

Airplane

Automotive

Scale

INDIAN

1499

From

Atlanta

JACKSON

930

5-64

KANSAS

1300

Victor

LOS AN

4535

JEFFER

LOUISV

2008

CAH

MEMPH

676

5-16

WHERE

You'll save time and foot-work by calling—or visiting—your nearest Fairbanks-Morse sales center listed here.

One call may answer many of your immediate and future purchasing problems. Too, full engineering and application assistance is quickly available on any and all of the Fairbanks-Morse products which might interest you.

ATLANTA 3, GEORGIA

760 Lee St., S. W.
AMhurst 7701

BALTIMORE 18, MD.

659 E. 25th St.
BEImont 5258

BIRMINGHAM 1, ALA.

626 N. Ninth St. Zone 4
3-6546

BOSTON 10, MASS.

178 Atlantic Avenue
LAfayette 3-3600

BUFFALO 3, N. Y.

33 Franklin St.
Lincoln 4210

CHARLOTTE 2, N. C.

Liberty Life Bldg.
Room 605
6-2893

CHICAGO 5, ILLINOIS

1550 S. State St.
HArrison 7-7100

CINCINNATI 2, OHIO

49 Central Avenue
MAin 3010

CLEVELAND 14, OHIO

3000 W. 117th St.
Clearwater 1-3300

COLUMBUS 8, OHIO

1034 Goodale Blvd.
WAlnut 8581

DALLAS 2, TEXAS

1713 N. Market Street
CEntral 4347

DENVER 2, COLO.

1500 17th Street
TAber 6241

DES MOINES 17, IOWA

2017 Dean Avenue
6-1189

DETROIT 13, MICHIGAN

11110 East Warren Ave.
Valley 1-7100

DULUTH 2, MINN.

Board of Trade Bldg.
2-7538

HOUSTON 13, TEXAS

5521 Navigation Blvd.
WAYSide 2159—(LD 508

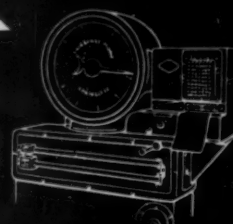


FAIRBANKS-MORSE, a

S-MORSE

L P R O D U C T S

S GUIDE



Printomatic
Dial Scales

-Ring

Solid

ollow

duc-

shaft

motor.

T and

speed

trifu-

trifugal

umps.

duplex

PUMPS (Cont.)

Deep well turbine pumps.
Duplex steam pumps.
Frame constructed rotary pumps.
Horizontal angle flow pumps.
Paper stock pumps.
Rotary pumps.
Sewage and trash pumps—horizontal and vertical, including new bladeless "non-clog" impeller types.
Split-case centrifugal pumps.
Two-stage Builttogether pumps.
Two-stage centrifugal pumps.
Vertical angle flow pumps.
Vertical propeller pumps.

SCALES

Abattoir Scales
Airplane Scales
Automatic Charging Scales

Bakers' Scales
Barrel Scales
Batching Scales
Belt Conveyor Scales
Bench Dial Scales
Bench Scales

Cane Hoist Scales
Canners' Scales
Coal Tipple Scales
Concrete Aggregate Scales
Confectioners' Scales
Conveyor Weigher Scales
Counter Scales
Counting Scales
Crane Dial Scales
Cream Receiving Scales

Dairy Scales
Dump Scales
Dial Scales—All Types

Evans Balance Scales
Electric Control Weighing Scales

Folding Platform Scales

Furnace Charging Car Scales

Grain Testers

Hanging Dial Scales
Hopper Scales
Household Scales

Industrial Scales

Livestock Scales
Laundry Scales
Locomotive Wheel Load Scales

Mail Scales
Meat Beams
Mine Car Scales
Monorail Dial Scales
Motor Truck Scales
Motor Truck Wheel Load Scales
Motor Truck Axle Load Scales

Overhead Suspension Platform Scales
Overhead Track Dial Scales

Platform Counter Scales
Portable Dial Scales
Portable Platform Scales
Precision Indicators
Predetermined Weighing Scales
Printomatic Weighers
Printomatic Crane Scales
Printomatic Railroad Track Scales

Railroad Track Scales

Suspension Crane Scales
Suspension Platform Portable Scales

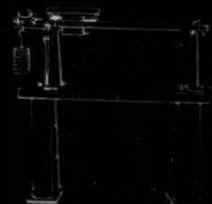
Tank Scales
Test Weights

Unit Counting Scales

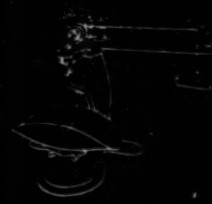
Wagon Scales
Water Meter Beams
Warehouse Scales
Weigh-Bagger Scales
Weigh-Can Scales
Wheelbarrow Scales



Bench Scales



Full-Capacity
Beam Scales



Counting Scales

INDIANAPOLIS 2, IND.
1499 N. Harding St.
Franklin 3684
Atlantic 3092

JACKSONVILLE 6, FLA.
930 East Adams St.
3-6473

KANSAS CITY 7, MO.
1300 Liberty Street
Victor 6474

LOS ANGELES 11, CALIF.
4535 S. Soto Street
Jefferson 8151

LOUISVILLE 8, KY.
2008 So. Brook St.
Calhoun 1469

MEMPHIS 7, TENN.
676 Jefferson Ave.
3-1614

MILWAUKEE 3, WIS.
404 N. Plankinton
DAly 8-0180

MINNEAPOLIS 15, MINN.
417 S. Fourth Street
MAIn 4353

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1000 St. Charles Ave.
RAYmond 3115

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80 Broad St.
HANover 2-7470

OMAHA 8, NEBRASKA
902 Harney St.
ATLantic 3122

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SCHenley 1-3123

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105 S. E. Taylor St.
EAST 0131

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GAspee 1-1531

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Salmon Bay Terminal
ALden 6600

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403 South Main St.
185

TULSA 3, OKLA.
1335 Hunt Bldg.
3-8231

WASHINGTON 5, D. C.
1000 Vermont Ave., N. W.
District 6694

FAIRBANKS-MORSE de MEXICO S. A.
Balderas 146, Mexico 1, D. F. Mexico
10 06 74 y 10 09 58

E, a name worth remembering

Export Division:

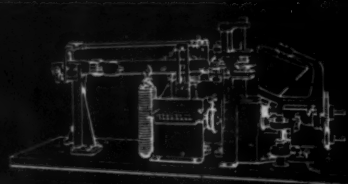
NEW YORK 4, N. Y. 80 Broad Street—HANover 2-7470



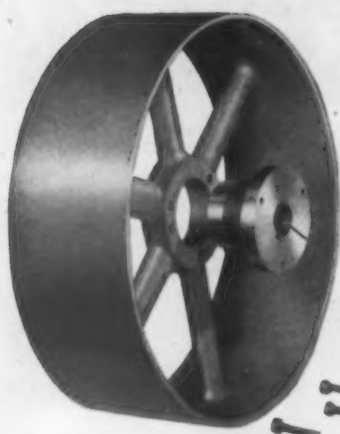
General Purpose
Motors



High Torque
Compressor
Motors



Belt Conveyor
Scales



SAVE WITH PYOTT QUE-DEE CAST-IRON PULLEYS

Pyott Que-Dee (quick detachable) Flat Belt Pulleys offer the same economies and time-saving advantages in assembly and field operations as Pyott Que-Dee Sheaves. The Taper-Tight Bushing, with standard keyway, slips easily over shaft. The tapered hub of the Que-Dee Pulley slides easily into position on the Taper-Tight Bushing. Three bolts pull pulley bushing and shaft into a positive powerful pull-up fit. For dismounting, the same bolts, inserted in demounting holes, act as jack screws to loosen pulley.

Immediate Delivery in popular diameters and face widths from complete factory stocks or your mill supply.

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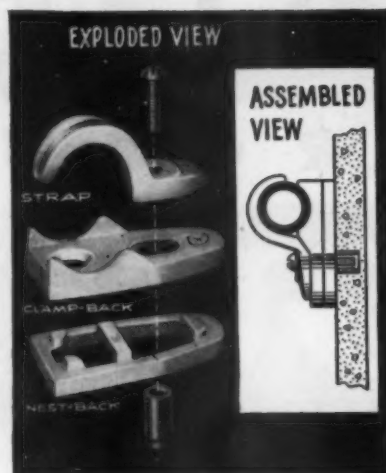
U. S. Patent No. 2,477,855

- ✓ For joining grader, trencher, ditcher and other earth moving conveyor belts.
- ✓ For belts $\frac{3}{8}$ " to $\frac{1}{2}$ " thick.
- ✓ A FLEXCO fastener that is HINGED. Has removable hinge pin.
- ✓ Troughs naturally, operates through take-up pulleys.
- ✓ Strong, durable . . . pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO
4697 Lexington St., Chicago 44, Ill.

Fitting Improves Conduit Strapping



The malleable iron pipe strap and clamp back familiar to conduit users has been made more versatile and efficient with a new fitting of the Gedney Electric Co., 1270 Sixth Avenue, New York, N. Y. Called the Nest Back, it is a supplementary spacer that fits snugly under the clamp back and makes possible additional spacing away from the mounting surface. This gives the extra room necessary for cleanliness, corrosion prevention or complete paint coverage. The fittings are also used as shims to offset low spots in uneven surfaces. Full range of sizes for rigid conduit and E.M.T.

No. 128 — Use Coupon on Page 128

Polishing Head Follows Irregular Surfaces

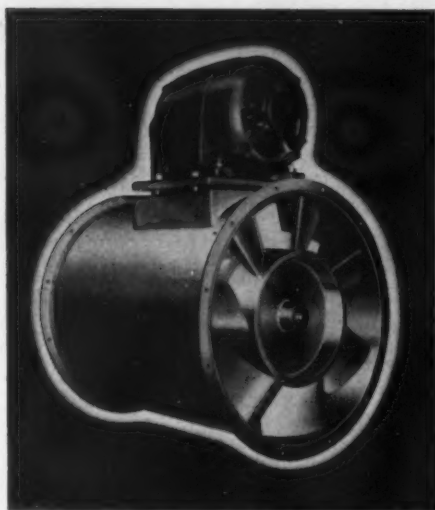


Construction of a new brush-backed polishing head permits it to follow irregular surfaces, instead of reshaping them. As a result, it can be effectively used in finishing operations on all classes of shaped surfaces. The portable head consists of an outer shell or drum, holding 16 replaceable brushes, and a center spool on which are coiled 16 strips of abrasive cloth. The brush bristles force the abrasive

(Please turn to page 162)



the HARTZELL vaneaxial blower is **EASY** to install

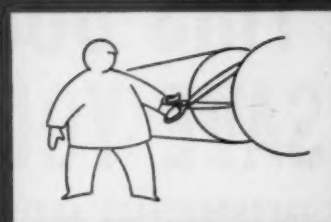


A POWERFUL BLOWER

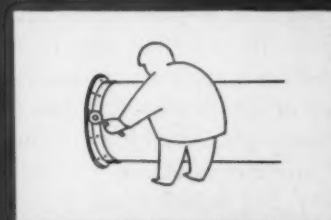
*efficient against very
heavy pressures*

Maybe you didn't realize this: A single Hartzell 48" Vaneaxial Blower can move 71,100 CFM against a half-inch static pressure, consuming just 50 HP, or 41,100 CFM against seven-and-a-half inches, with 65.3 HP. That's air-moving power against pressure! So, you see, there's no need to put up with clumsy, power-wasting air-moving devices which require an engineering crew for installation and clutter up valuable floor space. Get the complete economy of Hartzell Vaneaxial Blower design and construction . . . economy which begins with purchase price and installation and saves your money year after year after year.

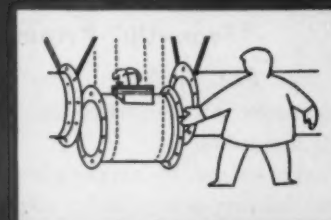
*cut out a duct
section same
length as blower*



*bolt angle-iron
flanges to
duct ends*



*bolt the blower
to the duct ends
just installed,
and brace
duct flanges*



*And that's all — just make
electrical connections and you're done!*

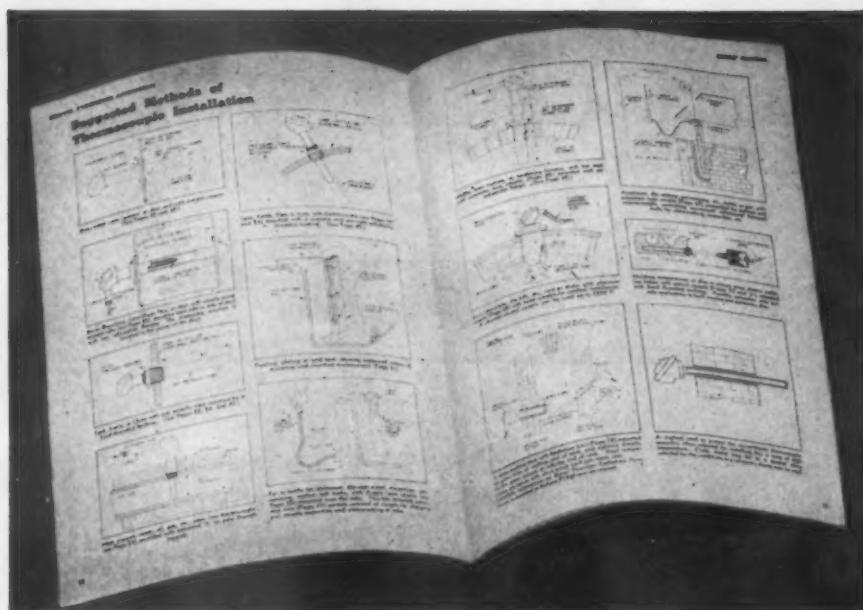
CLIP AND MAIL THIS COUPON NOW FOR INFORMATION



HARTZELL PROPELLER FAN CO.
Div. of Castle Hills Corp.
PIQUA DEPT. D OHIO

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Company _____
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PROPELLER-TYPE FANS AND BLOWERS—ROOF VENTILATORS—UNIT HEATERS • ENGINEERING OFFICES IN PRINCIPAL CITIES



NEW EDITION. Contains many new facts and suggestions—more useful information than previous editions.

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ON THERMOCOUPLES AND PYROMETER ACCESSORIES

Put this new 56-page buyers' guide and users' manual to work in your plant. Write for free copy today.

Bristol's new engineering handbook makes correct selection and application of pyrometer supplies an easy matter. Lists the widest variety of thermocouple assemblies, pyrometer tubes, terminal heads, thermocouple wire and extension wire on the market. Address THE BRISTOL COMPANY, 124 Bristol Road, Waterbury 20, Conn. (The Bristol Company of Canada, Ltd., Toronto, Ont.)

Let Us Show You How You Can Save Money By Using Bristol's "Team-Up" Pyrometer Supplies Plan

You save, first, by "teaming-up" your purchases of thermocouples and pyrometer accessories to take advantage of Bristol's substantial quantity discounts.

You save, second, by having adequate reserves always on hand, thus avoiding delivery delays which might be costly.

Bristol carries stock for immediate shipment in Waterbury, Conn., Chicago and San Francisco.



BRISTOL

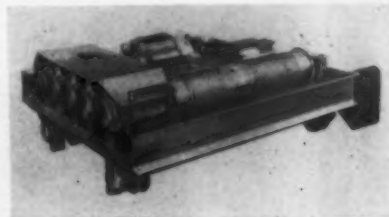
AUTOMATIC CONTROLLING, RECORDING
AND TELEMETERING INSTRUMENTS

(Continued from page 160)

tips into depressions and also allow them to ride over projections of the work-piece surfaces. An entirely different set of results may be obtained with the same head, simply by changing the grade and grit of abrasive strips used. Made by Vonnegut Moulder Corporation, 1819 Madison Ave., Indianapolis 25, Ind.

No. 129 — Use Coupon on Page 128

Trolley Hoist Has Low Headroom



Conco Engineering Works' new Type "SD" trolley hoist, available in 5 and 7½ ton capacities, features these advantages: completely electric welded steel trolley frame and hoist gear housing; all gears machine cut from solid steel blanks, fully enclosed and operating in oil; all shafting provided with heavy duty Hyatt roller bearings. The hoist is available with mechanical load brake of Weston screw and disc type, or arranged for dynamic lowering with either a-c or d-c controls. It is described as combining ultra-modern design with low headroom. Conco is at Mendota, Ill.

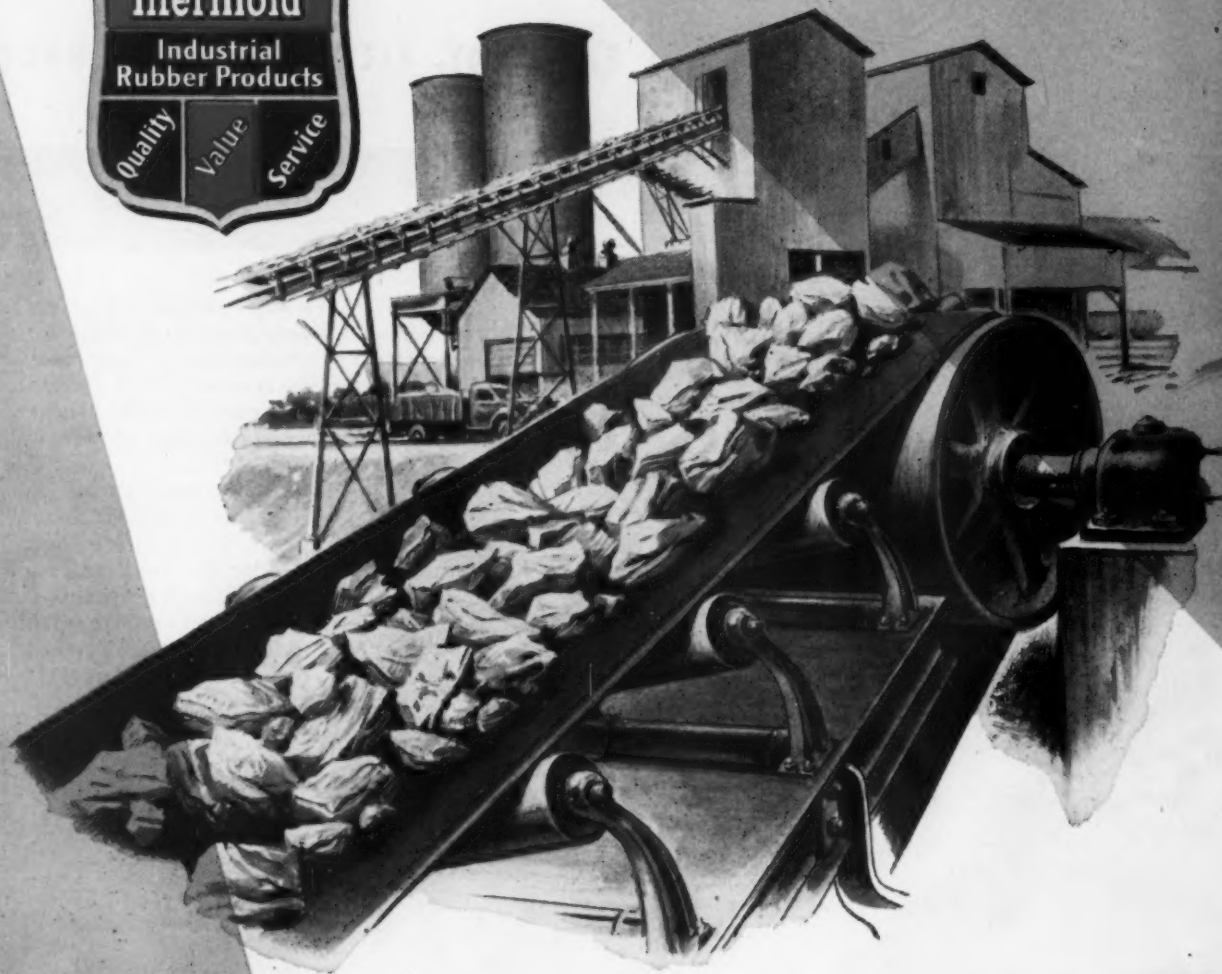
No. 130 — Use Coupon on Page 128

Extruded Synthetic Rubber Sealer

An extruded synthetic rubber sealer first used in automobile manufacturing has been made available to industry by Minnesota Mining and Manufacturing Company's adhesive and coatings division. When pressed into a seam and tightened between metal surfaces, it seals the joint like a rubber gasket. When heated, it swells about 50% and cures to a tough flexible mass, providing a sponge-rubber type of seal. Known as EC 1055, it is extruded in rope-like dimensions, in varying shapes and lengths for different production lines. It consists of 100% of solids, has no fire or toxicity hazards, no shrinkage problem, no need for special flow or pressure equipment, and little or no clean-up work after application. 3M's division is located at 411 Piquette Ave., Detroit, Mich.

No. 131 — Use Coupon on Page 128

(Please turn to page 164)

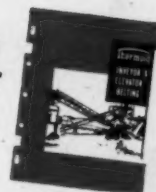


"Whatever Your Conveyor Belting Problem . . . Thermoid Has The Answer"

Whatever the job—whatever the nature of the materials to be handled—heavy or light, soft or abrasive, hot or cold, wet or dry, uniform or non-uniform in size—there is a Thermoid belt built to do the job at the lowest cost per ton of material handled.

Thermoid belts are made with an extra margin of endurance. You will find they stay on the job long after ordinary belts fail. With Thermoid, you will have fewer delays due to belt breakage or premature wear. Your Thermoid distributor will be glad to help you with your requirements.

Here's The Book That Will Answer Many Of Your Questions



Drop us a line for your free copy of Book No. 3679. It is a handy reference guide, concise and complete. 16 pages of valuable charts, tables and graphs tell how to select the right conveyor or elevator belt for the materials to be handled . . . how to determine capacities, speeds, weights and number of plies.

Thermoid

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

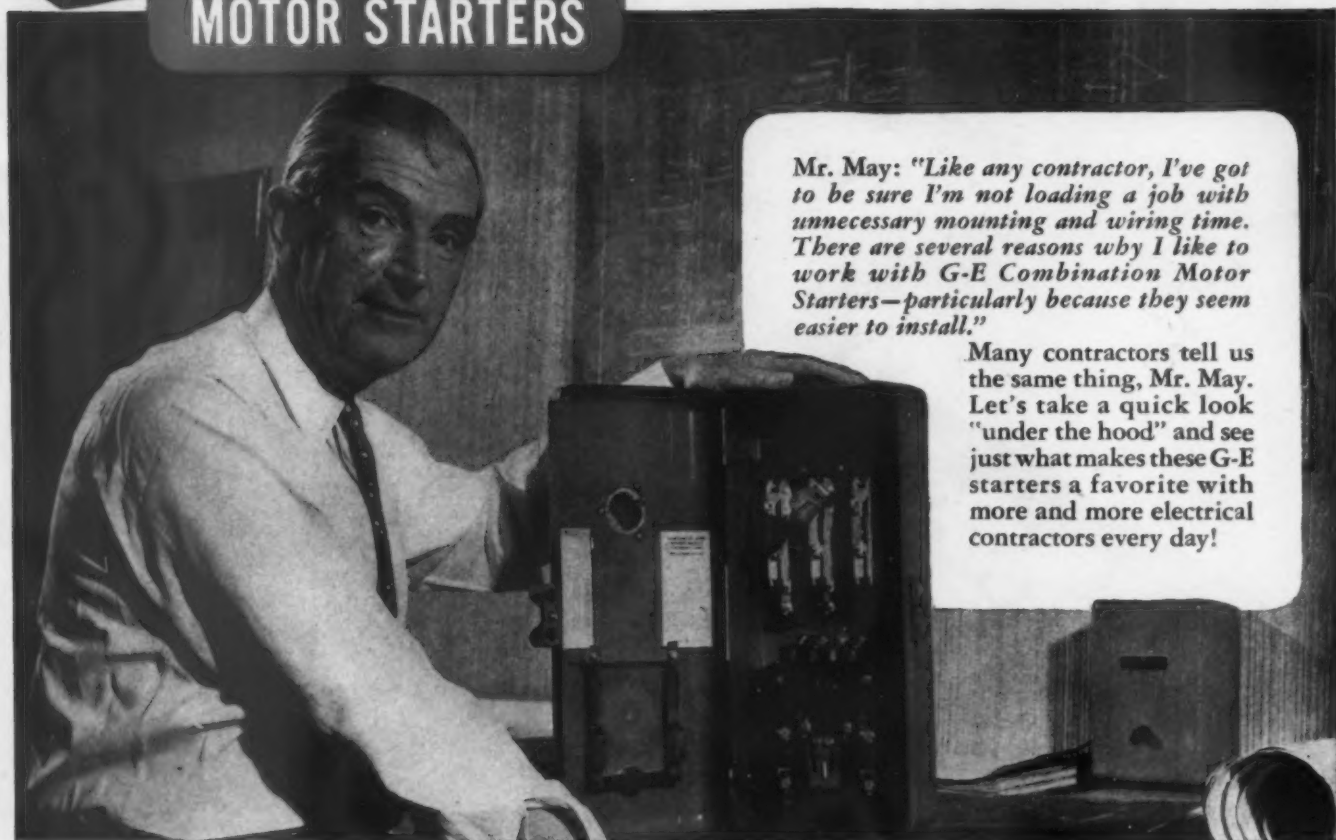
Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah



COMBINATION MOTOR STARTERS

...save wiring

E. G. MAY, ELECTRICAL CONTRACTOR,

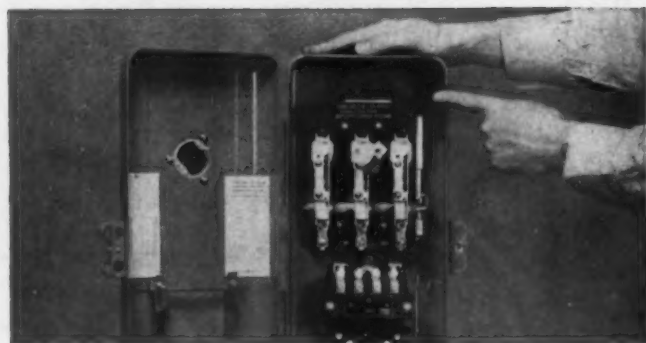


Mr. May: "Like any contractor, I've got to be sure I'm not loading a job with unnecessary mounting and wiring time. There are several reasons why I like to work with G-E Combination Motor Starters—particularly because they seem easier to install."

Many contractors tell us the same thing, Mr. May. Let's take a quick look "under the hood" and see just what makes these G-E starters a favorite with more and more electrical contractors every day!



1 Mr. May: "Suppose we start with the mounting. There's a real time-saver!"
That's right, Mr. May. Both starter and disconnect switch are mounted in one case. Thus, they're installed as a unit! You save wiring time and your customer gets a neater installation!



2 Mr. May: "Wiring room is mighty important to a contractor."
Then you should like the layout of this starter. There's plenty of room at top and bottom for line and load wiring. Of course, we take care of wiring the disconnect switch to the starter at the factory.

GENERAL ELECTRIC

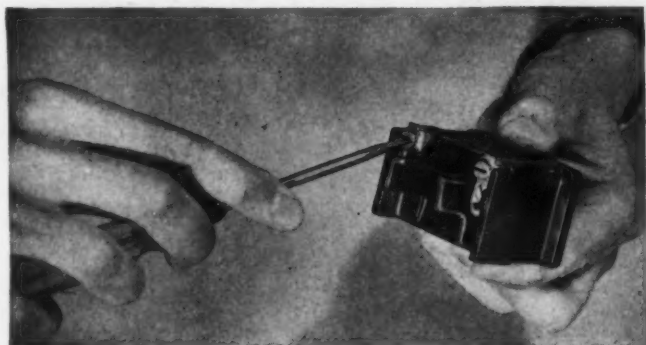
730-24

time for these 4 reasons

REVEALS THE "REASONS WHY" HE PREFERS G-E COMBINATION STARTERS



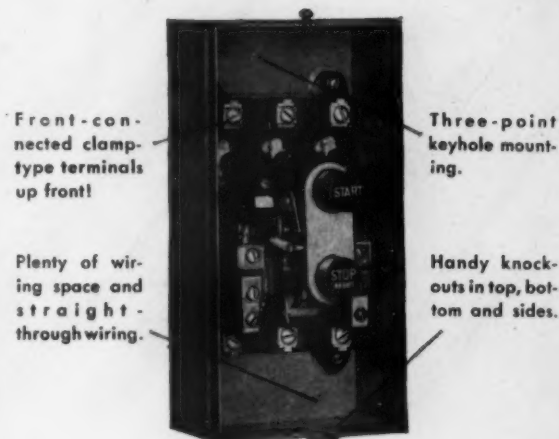
3 Mr. May: "Having these terminals up front makes them easy to work with!" Remember, too, you're working with large pan-head screws. All you do is strip the wires, slide them under the terminal clamps which ride out with the screws, and then tighten. All terminals are big, rugged and permanently anchored.



4 Mr. May: "I've heard a lot about this coil. What's so different about it?" It's completely encased in plastic—so that neither you when installing the starter, nor your customer when servicing it can damage the coil with a slipping screwdriver; and you can assure your customers that these "Strong Box" coils last longer because water, dust and oil are sealed out!

G-E Manual Starters ...easier to install, too!

For manual starting of 7½ hp or smaller motors, you can't beat a G-E starter for easy installation, long life. Built to the same rugged specifications as the magnetic starter, it includes many of the same features for quick-wiring:



These starters are available with either push-button or toggle-switch operation, and can also be obtained in water-proof, dust-proof, or explosion-proof enclosures . . . 2-, 3-, or 4-pole forms.

G.E. also offers a complete line of control accessories to make operations more automatic . . . more convenient.

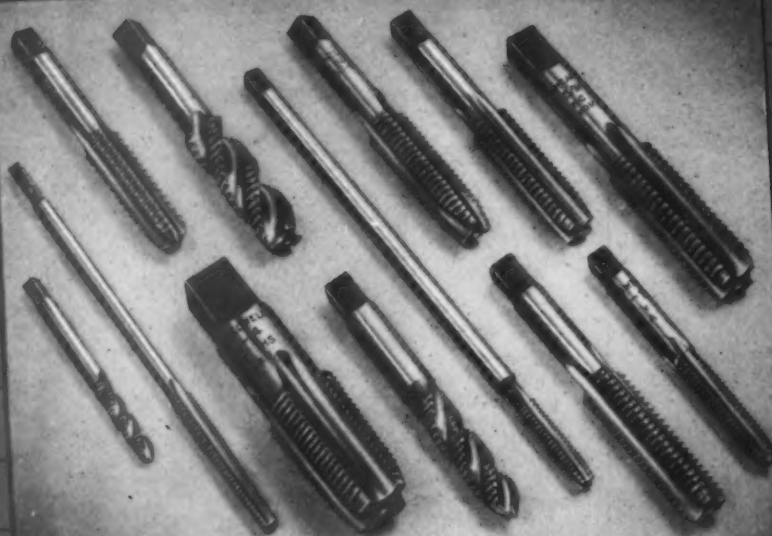
**BUY ONE
AND
COMPARE!**

Take any G-E motor starter apart and inspect it. See for yourself why G-E starters last longer, cost less to install, and are easier to maintain than any starters you can buy. Your G-E representative or authorized distributor can supply many models of G-E starters in NEMA sizes 0, 1, 2, and 3 for motors up to 50 hp; anticipate your requirements and place your order early. For more information on magnetic starters, write for Bulletin GEA-5153; manual starters, Bulletin GEA-1522. Section 730-24, General Electric Company, Schenectady 5, N. Y.

Threadwell
Tools do
many jobs



they can do your tough ones



When you're racing against time . . .

the quickest way to get that tapping
job done right the first time is to
specify Threadwell. Saves time and
money when it counts . . . NOW!

. . . ask your Threadwell Distributor



THREADWELL TAP & DIE CO. GREENFIELD, MASS.

New Staple Machine
Weighs Only 4¼ Lbs.



A low-price retractable anvil staple machine that weighs only 4¼ lbs. is being offered by International Staple and Machinery Co., Herrin, Ill., for applications where purchases of a larger machine would be economically unsound. Called the "Boxer", it holds 100 staples of the same size used in machines weighing 1000 lbs., and requires no skill or extra effort in operation. The machine makes a strong, tight closure on cartons which have already been filled.

No. 132 — Use Coupon on Page 128

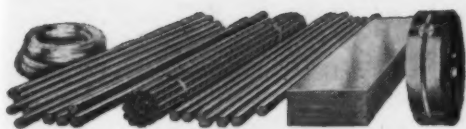
Grinding Wheel Bond For
Carbide Tool Sharpening



Time and cost economies in a field threatened with material and labor shortages are promised from a new grinding wheel bond designed especially for tungsten carbide tool sharpening. Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago, Ill., says the bond — "XL" — makes vitrified silicon carbide grinding wheels superior to any now available. "XL" bonded wheels are recommended for off-hand or precision grinding of carbide tools on milling cutters, broaches, reamers, counterbores and similar applications.

No. 133 — Use Coupon on Page 128

(Please turn to page 168)



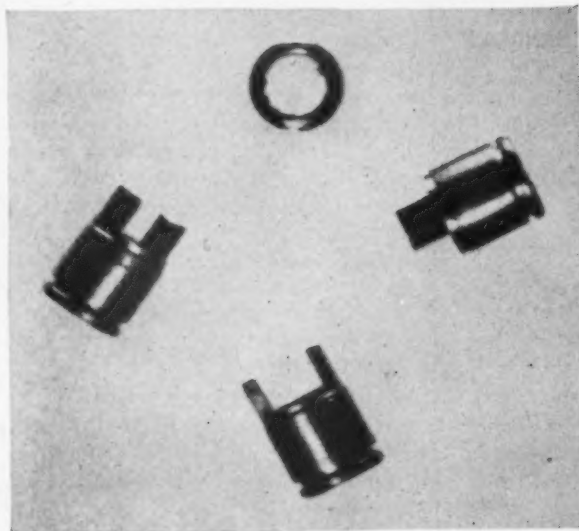
BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN



MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND. — IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL

Milling Speed of 1760 FPM Used on Free Machining Brass Rod



Tanged bushing milled in Davenport screw machine — Courtesy Walker Manufacturing Company, Medfield, Mass.

The speed with which free machining brass rod can be cut in screw machines is very much dependent on the operation involved and the choice of tools.

An example of this is seen in the illustrated tanged bushing produced in a Davenport. Using a standard milling attachment at one spindle with two 2.25 in. diameter milling cutters with 60 teeth, the tangs were milled at 3000 revolutions per minute. This is at the rate of 1766 feet per minute.

Milling Matches Turning Cycle

This high speed was necessary to keep up with the one second cycle on the part. Since the cutters were traveling at such a rapid speed the coolant was practically a negligible factor as it was thrown off by centrifugal force.

Generally, milling of free machining brass is around 500-700 fpm.

The outside diameter of the bushing is .275 in., and the inside .187 in., leaving a wall of only .044 in. The tangs are .093 in. wide and .120 in. long.

Despite the high speeds involved cutter life did not drop below the normal span. The finish on the part was good and there was a minimum of burr.

Limited on Speed

In many cases, especially where small rod diameters are involved, the speed with which free machining brass can be turned is limited by the speed of the machine. Sometimes the type of operations, such as tapping and boring, will also reduce the machine cycle.

In other instances, however, much

greater speeds could be attained in screw machines if greater attention were paid to the coolant and the cutting angles of the tools.

Except in the case of difficult tapping or threading operations, cooling is the most important function of the cutting compound. Light mineral oils or soluble oils are preferred by the majority of screw machine operators as they transfer the heat rapidly.

For low-leaded brasses or non-leaded alloys, heavier cutting compounds are needed to provide the necessary lubrication to reduce friction during the cut and prevent loading of the alloys on the tools.

Tool Angle Important

Although many operators use the same tools for cutting naval brass or low-leaded brasses, it will generally be found more advantageous if the rake and clearance angles are increased to give better chip control. This also reduces the power needed to tear away the chip as well as the friction-produced heat.

Single Screw Machine Piece Produces Right-Angle Connector

Ingenuity on the part of the design, method and tool engineer can often effect large savings in the production of a unit.

An example of this is a right angle coaxial cable connector. Since one side of the connector shell has a counterbore and the other a turned shoulder, the part, made from leaded brass, was produced in a screw machine.

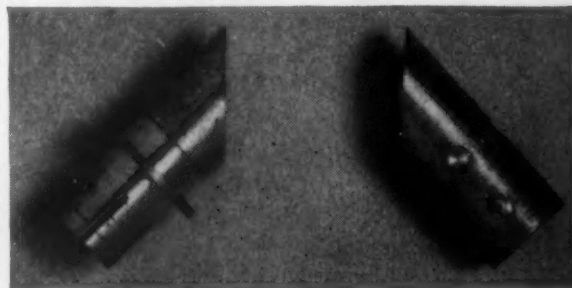
The bore was cut on the front end and the shoulder turned on the back and the part cut off.

Using a milling fixture of accurate design, a 45-degree cut was made through the part and each section kept separate at

the milling machine.

Since all parts came from the same fixture, mating for silver soldering proved a simple factor.

This method eliminated one turning and milling operation, plus the extra handling involved. (6155)



Two sides of right angle connector are shown at right. Straight piece was turned on screw machine prior to milling — Courtesy Walker Manufacturing Co., Medfield, Mass.

SURPRISING SAVINGS

Reported by Users of
**STANDARD PNEUMATIC
TUBE SYSTEMS**



SAFE — SWIFT DELIVERY BY "AIR" OF MESSAGES — MONEY — MERCHANDISE!

Savings as high as \$10,000 in 9 months' time are reported by users of Standard Pneumatic Tube Systems — filling orders, moving merchandise, money, messages, records, between departments. Reduce messenger and telephone service. Can be installed for a wide range

of needs in stores, warehouses, manufacturing plants, offices. Write for Bulletin No. 11 and complete information — address Dept. P-18.

STANDARD CONVEYOR COMPANY
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Write for
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— Standard
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Get your
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How you may use them fully explained in
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ANCHOR PLASTICS CO., INC.

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JUST FILL IN YOUR

NAME

Clip to your letterhead and mail



Also Noted . . .

Willson Products, Inc., Reading, Pa., has a plastic cover lens for welding helmets and welding goggles it says will withstand pitting for much longer periods than either plain glass or coated cover glass. Available in 2" x 4½" and 50mm. round sizes, .040" thick.

No. 134 — Use Coupon on Page 128

Topflight Tape Co., York, Pa., has introduced a new pressure sensitive tape product, Print-Stix, that answers the demand for signs, labels, charts etc. larger than the limit of 3" x 36" imprints possible on tape. Print-Stix can be furnished in flat individual pieces, in almost any size, printed in any number of colors, square or die-cut, and in any quantities above 5000.

No. 135 — Use Coupon on Page 128

A fog gun developed by Bete Fog Nozzle, Inc., Greenfield, Mass., will convert ordinary garden hose into an effective inside fire fighting weapon. The fog produced will blanket and extinguish small fires of almost any kind. Can also be used for a variety of factory spraying applications, of water or tank stored liquids.

No. 136 — Use Coupon on Page 128

Pennsylvania Salt Mfg. Co., Philadelphia 7, Pa., is offering trichlorobenzene in pilot plant amounts. The product is a major ingredient in compounded transformer oils and is an excellent solvent for oils, fats, waxes, certain resins and oil soluble dyes.

No. 137 — Use Coupon on Page 128

E. C. Atkins and Company, 402 S. Illinois St., Indianapolis, Ind., is now packaging inserted tooth saw bits and holders in new two-color square fibre cans. Crimped on metal tops and bottoms give factory sealed protection, and prevent tampering. Easy opening is by pull string, and the telescope lid insures tight and quick closing.

No. 138 — Use Coupon on Page 128

Estimators, time and motion study men and supervisors can now make time and motion study calculations at the desk or at the operation with a new pocket tool. Called the Loyd time and production cost computer, it eliminates separate pencil calculations and slide rule manipulations. Developed by North American Aviation, it is offered to the public through Willer Sales Co., Box 10008, International Airport, Los Angeles, Calif.

No. 139 — Use Coupon on Page 128

(Please turn to page 172)



*Take a bite out of
high power costs!*

Bring them down with these DAYTON Cog-Belt* "teeth"

- ✓ 40% more h.p. per belt
- ✓ fewer belts
- ✓ fewer pulley grooves
- ✓ longer belt life

Switch to premium Dayton Cog-Belts and watch the cost of power transmission come tumbling down. Original cost is less. 5 Dayton Cog-Belts do the work of 7 ordinary V-Belts.

You save drive space. Cog-Belts let you use up to 25% shorter center-to-center pulley distances.

Cogs are the *only* V-Belts scientifically built to bend, like your finger. They withstand flexing and compression strains better, run cooler, last longer.

To get shut of V-Belt troubles for the duration, to save money and drive

space, give your Dayton Distributor the "high-sign" of better V-Belt power transmission: the arched finger that means Dayton Cog-Belts and important savings!

COGS FIX FLATS!

Dayton Cog-Belts converted a compressor drive in a railroad shop, from a flat drive that averaged 6 breakdowns a year, to a trouble-free V-flat drive now going into its tenth year of service. Cogs need no special pulleys, grip so well they convert flat to V-flat with only one pulley change!



V-Belts by

Dayton Rubber

DAYTON RUBBER COMPANY • DAYTON 1, OHIO

*T.M.

WORLD'S LARGEST MANUFACTURER OF V-BELTS

AUGUST, 1951

Please mention *PURCHASING Magazine* when writing to advertisers.

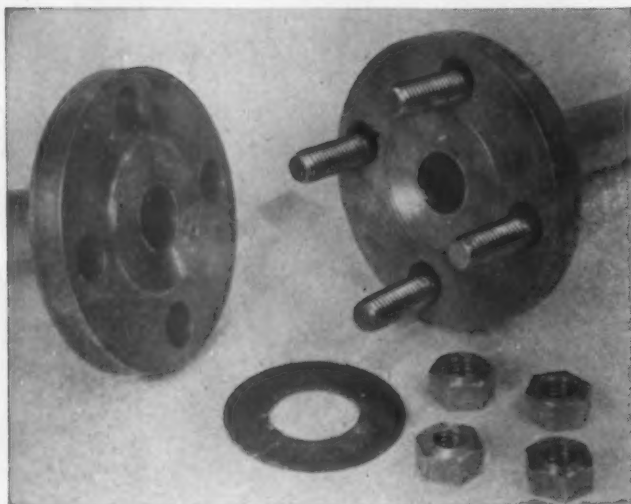
169

NEW

Speedline fittings

OFFER SAVINGS on

CORROSION-RESISTANT PIPING JOBS

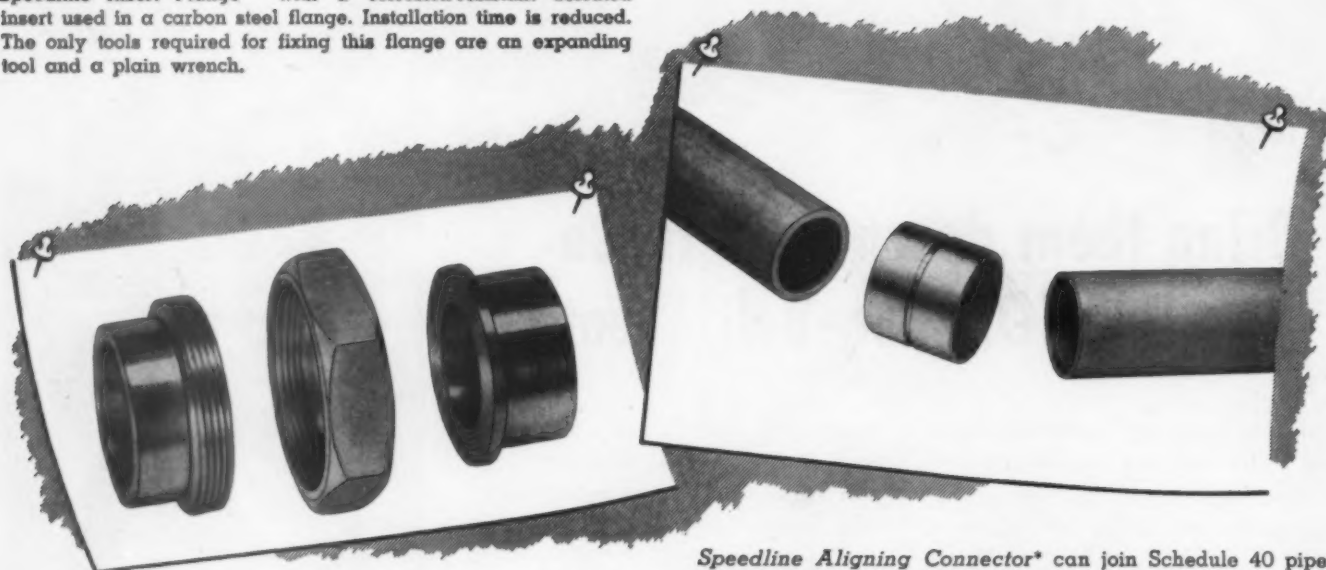


Speedline Insert Flange* with a corrosion-resistant serrated insert used in a carbon steel flange. Installation time is reduced. The only tools required for fixing this flange are an expanding tool and a plain wrench.

The three main advantages you can get with the new Speedline fittings are:

- 1.** Improved piping layouts with greater flexibility and increased capacity through the use of light-weight Schedule 5 pipe.
- 2.** Reduced installation costs because of simplified construction that frequently eliminates welding, vanstoning or threading of tubing or pipe.
- 3.** Lower first cost when compared with similar fittings available today.

To discover how Speedline corrosion-resistant fittings can simplify installation and help you conserve critical materials, write for a copy of the Speedline Fittings Book.



Speedline Tube Union* combines the best features of screwed pipe unions and sanitary tube unions. It solves leakage problems frequently encountered with corrosion-resistant ground joints.

Speedline Aligning Connector* can join Schedule 40 pipe (left) with light-wall Schedule 5 corrosion-resistant pipe. Or, used in complete installations of Schedule 5 pipe and lightweight O.D. tubing, it provides outstanding economy.

*Patent applied for

The Speedline Fittings described here as well as tees, elbows, etc. are made in A.I.S.I. grades of stainless and Carpenter Stainless No. 20. Other corrosion-resistant materials are used to meet specific conditions of service.



Sizes, Dimensions and Cost Comparison Data are in this 8-page Speedline Fittings Book. A table of pipe Schedules 5, 10, 40 and tubing cross-sectional areas gives useful information for planning piping layouts. Write for your copy today.

HORACE T. POTTS CO. Since 1815

Erie Avenue and D Street, Philadelphia 34, Pa.
GA 6-4600

Baltimore Branch Warehouse 2835 Sisson St.
HOPKINS 6800

Speedline

Corrosion-Resistant FITTINGS

—the newest thing in pipeline economy



✓ Analysis and physical properties of steel are checked on receipt from hot mills.



✓ Gases in controlled-atmosphere annealing furnaces are constantly checked.



✓ Temperatures of annealing furnaces are constantly and closely checked.



✓ Dimensions of the steel are carefully checked after cold drawing.



✓ Hardness and surface of steel is checked after cold drawing and annealing.



✓ Structure of the steel is carefully checked after it has been annealed.



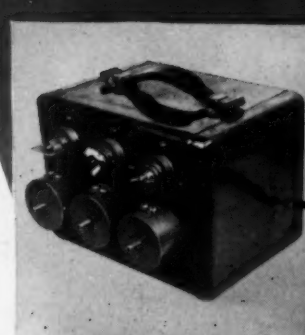
✓ Finished washers are checked frequently to insure size accuracy.



✓ Tensile of finished washers is checked to insure proper co-active tension.



✓ Reactive pressure and physical properties of the finished washers are checked.



✓ Final check. "Convener" proves Reliance Spring Lock Washers provide essential tight seal.

10 Checks - To Guarantee Performance WHEN YOU USE RELiance Spring LOCK WASHERS ON YOUR PRODUCT

You take no chances when you buy Reliance Spring Lock Washers because nothing is left to chance in their manufacture. Every precaution is taken to insure their quality and satisfactory performance on your product. The steel is purchased to rigid specifications and drawn in our own mill. Every phase of production is under tight control of Reliance metallurgists and constant checks throughout the manufacturing processes guarantee quality, accuracy and satisfaction. You're always on safe ground when you order Reliance Spring Lock Washers.



EATON

EATON MANUFACTURING COMPANY



RELiance DIVISION, CLEVELAND, OHIO

Sales Offices: New York, Cleveland, Detroit, Chicago, St. Louis, San Francisco, Montreal
In Canada: Eaton Automotive Products, Ltd., London, Ont.



On nearby shelves
of industrial sup-
ply distributors

BAY STATE TAP & DIE CO.
Mansfield, Mass.

(Continued from page 168)

PCA-100 is a penetrating and sealing **anti-rust paint** which can be applied right over rusted surfaces. It is called equally effective in preventing rust on new metal or stopping rust action on present rusted metal. Furnished in black only, it can be sprayed or brushed. Made by Paint Corporation of America, Fidelity Bldg., Cleveland, O.

No. 140 — Use Coupon on Page 128

Latest product of Speco, Inc., 7308 Associate Ave., Cleveland, O., is an industrial **powdered hand soap** and grease remover called Sopec. It is said to combat industrial dermatitis, and to be non-abrasive, safe, soothing and fast acting.

No. 141 — Use Coupon on Page 128

A new **foaming agent for plastics**, called Porophor N (Azo Isobutyric Dinitrile) is now manufactured on a production basis by Westville Laboratories, Monroe Center, Conn. Samples available.

No. 142 — Use Coupon on Page 128

Multi-Clean Products, Inc., 2277 Ford Parkway, St. Paul, Minn., has a new **liquid concrete hardener** and etcher which provides etching control in the preparation of new or old concrete and terrazzo floors before sealing. Etching control governs penetration of the finish coat, extending its coverage.

No. 143 — Use Coupon on Page 128

Metalites, metallized paper capacitors that feature self-healing efficiency and amazing light weight, are now packed in distinctive red and black cartons. Other products made by Astron Corporation, 255 Grant Avenue, East Newark, N. J., such as dry electrolytics, are being similarly packaged.

No. 144 — Use Coupon on Page 128

F. T. Griswold Mfg. Co., 305 W. Lancaster Ave., Wayne, Pa., makes a simple and compact **metallograph** that is complete with every facility for examining, studying and photographing metal samples and other materials. Even large, heavy samples can be accommodated. The instrument measures 12" x 12" x 18" high.

No. 145 — Use Coupon on Page 128

Westinghouse Lamp Division (Bloomfield, N. J.) engineers have developed a tiny lamp that **dissipates odors** through a triple output of ozone-inducing radiations. The ozone replaces unpleasant smells with clean mountaintop air. The lamp must be burned in a special fixture with a current-controlling device.

No. 146 — Use Coupon on Page 128

Every time on every application the power drive that is the best is the one that gives you the RIGHT horsepower, the RIGHT shaft speed and RIGHT where you need it . . . all combined into one compact power package.

Don't put up with makeshift assemblies when it's so easy to get a unit that's just right for each job.

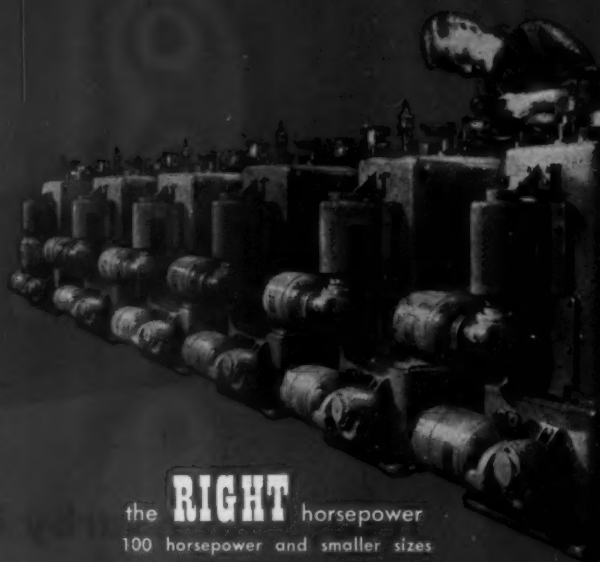
Master Motors, available in thousands and thousands of types and ratings (up to 150 HP), give you an enormous selection of units designed so that they easily combine to give you a power drive that will add greatly to the compactness, safety and economy of each job. Open, enclosed, splash proof, fan cooled, explosion proof . . . horizontal or vertical . . . for all phases, voltages and frequencies . . . in single

it works out the same every time

speed, multi-speed and variable speed types . . . with or without flanges or other special features . . . with 5 types of gear reduction up to 432 to 1 ratio . . . with electric brakes . . . with mechanical variable speed units . . . and for every type of mounting . . . Master has them all and so can be completely impartial in helping you select the one best motor drive for YOU.

Select the RIGHT power drive from Master's broad line and you can increase the saleability of your motor driven products . . . improve the economy and productivity of your plant equipment.

THE MASTER ELECTRIC COMPANY
DAYTON 1, OHIO



the **RIGHT** horsepower
100 horsepower and smaller sizes



the **RIGHT** shaft speed
Gear reduction ratios up to 432 to 1



and **RIGHT** where you want it

HERE COMES HELP!

**from your nearby Reynolds
Aluminum distributor**



Reynolds is putting forth every effort to ease your aluminum-buying problems. To meet the growing demand Reynolds Metals Company and other U. S. producers have already started on another vast expansion program which will greatly increase the country's aluminum production capacity.

To meet your immediate problems the nearby Reynolds distributor listed below is

doing his level best to fill orders from limited stocks.

You can also count on his assistance and guidance in selecting temporary alternate materials. He will apply all of his experience and energy to helping you out. Present your procurement problems to him. Now as always he will give you the kind of service you need and want.

YOUR REYNOLDS DISTRIBUTOR IS LISTED BELOW

ALABAMA

Arnold-Brown Metals & Supply Co.,
Birmingham
Southern States Iron Roofing Co.,
Birmingham

CALIFORNIA

Clingan & Fortier, Inc.,
San Francisco
Richard G. Stern & Co.,
Los Angeles
Roy-Holbrook, Inc.,
San Francisco
Union Hardware & Metal Co.,
Los Angeles
United States Steel Supply Co.,
Los Angeles and San Francisco
Western Metal Supply Company,
San Diego

COLORADO

Marsh Steel Corporation,
Colorado Springs and Denver

CONNECTICUT

American Steel & Alloys Corp.,
Hartford

FLORIDA

Worne-Wilson, Inc., Jacksonville,
Miami, Orlando and Tampa
Southern States Iron Roofing Co.,
Jacksonville and Orlando

GEORGIA

Southern States Iron Roofing Co.,
Albany, Atlanta and Savannah

ILLINOIS

J. G. Brown Co., (Architectural only)
Chicago
Silverstein & Pinsof Inc., (Ingots only)
Chicago
United States Steel Supply Co.,
Chicago
Benjamin Wolff & Co., Chicago

INDIANA

Brass & Copper Sales Co.,
Indianapolis

KENTUCKY

Southern States Iron Roofing Co.,
Louisville

LOUISIANA

Southern States Iron Roofing Co.,
New Orleans

MARYLAND

Clendenin Bros., Inc., (Wire, rod, bar,
structural) Baltimore
Lyon, Conklin & Co., Inc., Baltimore
United States Steel Supply Co.,
Baltimore

MASSACHUSETTS

Boy State Refining Co., (Ingots only)
Chicopee Falls
Arthur C. Harvey Company, Boston
Pratt & Inman, (Wire, rod, bar,
structural) Worcester

MICHIGAN

Kasie Steel Corporation, Detroit
McDonnell Bros., (Architectural only)
Detroit

MINNESOTA

United States Steel Supply Co.,
St. Paul
Vincel Brass & Copper Co.,
Minneapolis

MISSISSIPPI

Southern States Iron Roofing Co.,
Natchezburg

MISSOURI

Brass & Copper Sales Co.,
Kansas City and St. Louis
Marsh Steel Corporation,
N. Kansas City

NEW JERSEY

Edgcomb Steel Corporation, Hillside

NEW YORK

J. G. Brown Co., (Architectural only)
New York
Edgcomb Steel Corporation,
Hillside, N. J.
Rochester Smelting & Refining Co.,
(Ingots only) Rochester

NORTH CAROLINA

Southern States Iron Roofing Co.,
Raleigh

OHIO

The Atlas Metal Co., (Ingots only)
Cleveland
Hamilton Steel Company, Cleveland
Mutual Manufacturing & Supply Co.,
Cincinnati

OREGON

American Steel Warehouse Co.,
Portland

PENNSYLVANIA

Athas Steel Service Co., Philadelphia
Colonial Smelting & Refining Co.,
(Ingots only) Columbia
Levinson Steel Sales Company,
Pittsburgh
Merchant & Evans Co., Philadelphia
Potts-Farrington Company,
Philadelphia

SOUTH CAROLINA

Southern States Iron Roofing Co.,
Columbia

TENNESSEE

Southern States Iron Roofing Co.,
Nashville and Memphis

TEXAS

Moncrief-Lenoir Mfg. Co.,
Dallas, Ft. Worth, Harlingen,
Houston, Lubbock, San Antonio
and Temple

UTAH

Salt Lake Hardware Co., Salt Lake City

VIRGINIA

Southern States Iron Roofing Co.,
Richmond

WASHINGTON

Seattle Steel Company, Seattle

WISCONSIN

United States Steel Supply Co.,
Milwaukee
Benjamin Wolff & Co., Milwaukee

LOOK UNDER "ALUMINUM" IN YOUR CLASSIFIED TELEPHONE DIRECTORY



REYNOLDS ALUMINUM

MODERN DESIGN HAS ALUMINUM IN MIND

PURCHASING

AUGUST, 1951

OFFICE EQUIPMENT and SUPPLIES



PURCHASING MAGAZINE — A CONOVER-MAST PUBLICATION

205 EAST 42ND STREET, NEW YORK 17, N. Y.

— Modernize —

YOUR CATALOG AND BULLETIN FILES

Bring your source information up-to-date on new and improved office equipment and supplies by checking the latest trade literature listed on this page. This special office equipment section is in addition to the regular trade literature section on pages 19, 20, 22, and 24!

— When Writing to Manufacturers Direct, Please Mention **PURCHASING** Magazine. —

Portable Electric Duplicator With Built-in Interleaver

31. **SELF-CONTAINED** motor makes the Temop a truly portable electric duplicator. Among features are built-in interleaver which is synchronized with paper feed and will slipsheet copies at speeds up to 180 per minute, and pushbutton control. Paper jogger and guides precision-stack finished copies in receiving tray which will stack up to 500 sheets of 20-sub. mimeograph paper. Another feature is metered ink control. Bulletin illustrates the Tempo, and gives more detailed information about it. Milo Harding Company.

Fast Visible Reference

32 **BOOKLET** describes Linedex, an efficient and fast form of visible reference. It is designed to furnish accurate, fast, and economical flow of such information as will expedite

industrial and business transactions. It is based on the sectional principle, and installation may be started in a modest way and added to as needs become apparent. Capital expenditures are thus spread over a length of time and need only increase as the reference requirements expand. Management Controls Divn., Remington-Rand.

Dry, Electric, Direct Positive Process for Copying Anything

33. **BULLETIN** describes the Xerox copying method and equipment, users of which have reported big savings in time and money. The Xerography process is a new, dry, electrical, direct positive process for copying anything written, printed or drawn. No negative is required. Powders are used instead of chemicals and water—there are no fumes or odors. No film, sensitized or

chemically treated paper is required. Ordinary office paper can be used. A xerocopy is as permanent as the material on which it is printed. Copies are made in less than two minutes. With an enlarger, xerocopies can be made from 35mm positive film in any size to 8½" x 13" on paper or offset paper masters. The process eliminates the need for darkroom, plumbing, and so on. The equipment consists of three compact units which will fit on a 3' x 5' table. The Haloid Co.

Desk and Fountain Pen Sets, Lettertrays, Electric Pencil Sharpeners, etc.

34. **YOU** should have this new catalog of modern accessories for the office available. It illustrates and describes a number of practical items such as the Morriset desk pen set (available as chain sets and with Twinset bases), fountain pen sets, memo holders, phone rest which holds the phone in place without cramping your neck, book ends, and lettertrays—single and double. Also featured is an electric pencil sharpener which is self-operating as the pencil is inserted; cutting action ceases when correct point is obtained. It is a time and pencil saver. These are all practical items for the modern office, and looking ahead to the holiday season as gifts. Large companies use the desk pen sets by the thousands. Bert M. Morris Co. 8651 West Third St., Los Angeles, Calif.

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AUGUST, 1951

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Great DESK TOP EQUIPMENT

Quality, efficiency and years of dependable service have placed the Bert M. Morris Company foremost in the field of better Desk Top Equipment. Many famous users have their emblems imprinted in gold.



MORRISET—the constant-flowing, all-round writing implement that holds a full 2½ ounces of ink for months of writing without refill. Absolutely will not flood. Choice of five quickly replaceable "thread-in" points — extra fine, fine, medium, broad, stub.

THERE IS NO SUBSTITUTE FOR QUALITY. All Morris writing sets are equipped with iridium tipped points and each point is tested and approved at factory for writeability.



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Inquire about the surprisingly low cost of completely furnishing a desk with these items.

STURDINESS • EFFICIENCY SMARTNESS

These are combined in the superior design of all Desk Top Equipment manufactured by **THE BERT M. MORRIS CO.**

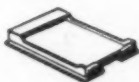
The setting shown — pen set, memo pad, letter tray, ash tray, bookends and phone rest are a rich appointment to any desk — the stamp of an exacting, efficient executive. The complete setting retails for little more than the cost of one higher priced — comparable fountain pen set.



FOUNTAIN PENS — an efficient and economical pen set with "thread-in" point section. A real time and money saver in any office.



BOOK ENDS — at last — inexpensive book ends to match modern office furniture.



MEMO PADS — available in two types. With jewelers bronze bar that drops as paper is used, or standard box style.



LETTER TRAY — strong two point suspension allows access from entire front and both sides. Tiers quickly added, legal or letter size.



ASH TRAY — A real He-Man ash tray. Glass lined, perfect for any desk or conference table.

BERT M. MORRIS CO. DEPT. P-1, 8651 WEST THIRD STREET—LOS ANGELES 48, CALIFORNIA

Office Buying Offers Opportunities for Important Savings

E. M. Krech, Director of Purchases, J. M. Huber Corporation

THE procurement of office equipment and supplies is of prime concern to men in purchasing, for careless buying breeds excessive prices, excessive inventory, obsolete stocks and waste.

With our company, though it represents only two percent or less of expenditures through the Purchasing Department, it runs into thousands of dollars annually. The need for the application of sound purchasing principles is obvious.

Because of the wide diversity and great amount of equipment and materials involved, it is obvious that this buying can either be a major source of waste, or the opportunity for constructive, profitable procurement. However, though involving large expenditures per se, because of the comparatively small relation of this buying to the entire buying structure, it is wise not to over-emphasize or unduly stress its importance in relation to production and maintenance buying. There is danger that some buyers may place too much emphasis on some small purchases—spending too much time on them to the detriment of the careful analysis and study required for major purchases.

This is not to say that we have not given the purchase of what may be termed administrative tools and accessories due attention. We have given it considerable attention for the very simple reason that 90% or more of these purchases are competitive. This buying includes typewriters, adding machines, calculators, duplicating equipment, file cases, desks, chairs, and the various appurtenances that fit into the office scheme.

We do not consider that the purchase of the highly specialized book-

keeping and accounting systems come within the scope of being competitive. These are things we do not buy every day. Most of these installations are highly technical in application. They are special purpose installations and it is the responsibility of our office manager and the respective department heads to see that such equipment is designed or selected to meet our particular accounting and other requirements. We do not feel that it is a part of the purchasing function to be specialists in these capital equipment adaptations, from the standpoint of requirements and type of equipment needed.

On the other hand, department heads and others in our organization are well aware of the responsibilities of the purchasing department in the overall procurement

program, hence there is a much desired spirit of cooperation between purchasing and the various departments in all procurement.

For instance, a department head will say that new equipment is wanted to do a certain kind of a job, and will ask us what we know about it. Based on the various types of equipment we are now using, and our records of available equipment on the market, we make a study of the problem with the person or department head making the request, and from there on it becomes a team problem, the purchasing department making contacts with suppliers. However, we feel that the final selection of the equipment is under the jurisdiction of the department that will use it.

In view of the fact that such a very large percentage of the new



Mr. Krech (left) discusses purchasing policy with President Hans Huber in the company's offices at 100 Park Avenue, New York, N. Y.

equipment we buy comes within the scope of being competitive, we have no problem from the standpoint of buying. However, we recognize that a small price advantage on a certain make of equipment, may be offset a hundredfold by another make that may offer various operating advantages, even though its initial cost may be more. We are not price-conscious, let us say, when it comes to selecting the most modern and efficient equipment that is assurance of greater production or other money saving and operating advantages.

We try to look at a new equipment from the standpoint of production returns, rather than initial price, for after all it is poor policy not to give due consideration to end results, duly weighing operating advantages and cost factors.

Though standardization is an important factor in both procurement and maintenance, we feel that office equipment (be it typewriters, calculators, adding machines, file cases and so on), made by reputable manufacturers affords both dependable service and reasonable trouble free maintenance. Hence, we have not established make standards for such equipment.

We feel that an operator must be satisfied with the equipment that she is using, else she will not be most efficient nor turn out the best work. Therefore, employees whose qualifications are known and who are permanently attached to our staff, have within reason the privilege of selecting the type of equipment they feel they can use to the best advantage.

For instance we are now using three makes of typewriters, our aim being to provide our stenographers and typists with the make of machine that they prefer. A new operator, of course, must use equipment that is available, but if it is felt that she will be a permanent employee, she may select the kind of machine she wants when opportunity so offers. This general policy applies to various types of mechanical equipment. We have three makes of calculators and two or three makes of various other office machines which have become accepted as standard equipment.

It is my feeling and the feeling of our general office manager, that the people who are using these varied pieces of equipment know a great deal more about their operation and use than we do. We have found that giving employees a little

leeway in choosing the equipment they must work with is a good morale builder, and has not resulted in any unwise expenditure or waste. If someone makes a recommendation that we feel is unsound, we point out the flaws in their reasoning, or explain the factors that preclude approval.

New and improved office machines are constantly coming to the fore. Like automobiles, the new models of office equipment announced from year to year reflect certain refinements and improve-

ments. And, as occasion permits, we buy the latest machines available.

We are using two or three types of duplicating equipment. Our most recent acquisition was a multigraph unit that is particularly adapted to a special type of work one of our departments has to do in considerable volume.

The purchase of new equipment. I wish to point out is a cooperative move with the various departments heads concerned. The basic aim is to buy the best type of equipment

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Purchase Order

Section 1 of "Conditions of Purchase" provides: "Buyer recognizes that seller may, for operating convenience, desire to utilize its own sales form in acknowledging this order, or otherwise acknowledge it than by simple acceptance. Regardless of the form in which this purchase order may be accepted, seller agrees that any provisions in the form of acceptance used, which modify, conflict with or contradict any provision of this order, shall be deemed to be waived, and that the provisions of this order constitute the whole contract between the parties." Section 6 provides: "Seller will give buyer the benefit of any price declines to actual time of shipment, except that should buyer permit shipment to be made before specified shipping date, buyer shall have advantage of lower prices which occur before specified shipping date."

PURCHASE REQUISITION		NYR 555	
J. M. HUBER CORPORATION		DATE _____	
DEPT _____	LOCATED AT _____	MATERIAL TO BE USED ON _____	
SHIP ATTENTION OF _____	SIGNED BY _____	APPROVED BY _____	
QUANTITY	DESCRIPTION	UNIT PRICE	STOCK ON ORDER ON HAND WUL LAY
	10-3/4" x 8-1/2"		
VIA _____	SUGGESTED SUPPLIERS _____	ISSUE PURCHASE ORDER TO _____	P.O. NO. _____
TERMS _____	NOTE: DO NOT ORDER DISSIMILAR ITEMS ON ONE REQUISITION		
F.O.B. _____			

Purchase Requisition

Purchase requisition provides space for inventory and use data.

Actual size of Receiving Report is 8½" x 7".

Disposal Record. This form is used by all of the Huber plants. It is a very practical form, providing Accounting and Purchasing with a complete record, and is of especial value in that it provides outside auditors with a quick and reach check on any disposal operation. It may be used as an invoice, or as a receipt when material is paid for at time of delivery to buyer.

Our Purchasing Department Manual provides among other things, that "The Purchasing Department will initiate, conduct and conclude all negotiations affecting purchases, prices, terms, delivery, etc.," and that "All requests for prices and all purchases must be made by the Purchasing Department." It also states that intermediate negotiations and interviews may be conducted by members of other departments with suppliers "with the knowledge and approval

The need for these provisions is obvious. Aside from possible contractual and service factors, or other obligations, our experience in the past has been that persons in other than the purchasing department are not familiar with the factors that lie behind sound buying. In some instances unwarranted prices are asked, and commitments may involve equipment that past experience has shown does not meet use and service required.

In other words, the principles of sound industrial buying apply to the purchase of office equipment, machines and supplies as well as to

We encourage our office personnel to keep abreast of the new developments that may come on the market. For instance, during the recent business show in New York, the members of the secretarial and filing staffs, stenographers and others were given the opportunity to visit the show during the regular office hours. We are sure that they did not visit the show for a "good time", for in general they returned to the office with a great deal of practical information.

In the purchase of office supplies and equipment, it is our endeavor to meet a need with the best equipment available. We have contracts covering typewriters and other machines. We confine most of our buying of filing equipment and office sundries to a limited number of commercial stationers who over the years have demonstrated their value as dependable suppliers for the things we want.

Office furniture and fixtures in the New York metropolitan area are purchased from specialists in those lines. Purchasing of such equipment at our seven plants is usually done locally. There are five purchasing agents outside of the New York office at these plants, and they have full authority to make purchases. Copies of the orders they place are sent to the New York office where they are checked to make sure that the purchases are in line with our policies. I should say that our plant purchasing men exercise good judgment in their buying. This applies both to their placing of orders and the type of purchases made. We do insist on

(Please turn to page 182)

PAPER by SORG



Tested by TIME!

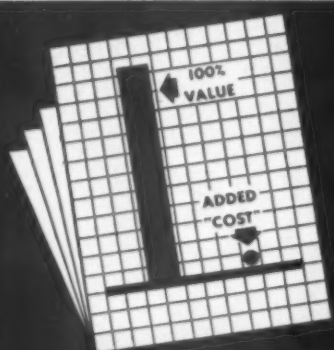
Even the wear and tear that a permanent document folder has to take, holds no terrors for Sorgh's Cream or White Sorex, No. 1 Jute Document, or Equator Index Bristol. For, with the versatility born of 99 years of quality papermaking, Sorgh has given these fine tag papers the strength necessary for the hardest usage. With the same versatility Sorgh can provide you with a paper tailor-made to your requirements—for printing, converting or for fabrication.

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SO MUCH for SO LITTLE

For over 100 years, L. L. BROWN record and letter papers have been widely used for governmental and business records which must *withstand time and hard handling*; and for business and professional correspondence which must be *outstandingly impressive*.

Although their superiorities have been time-tested and proved beyond question, L. L. BROWN papers add negligibly, *if at all*, to total accounting and correspondence costs. *Paper is but a minute part of such expenses*. The difference in cost between the best and the rest is hardly appreciable.

At little or no additional cost, you can be sure your records will last — that your letters will reflect you and your organization impressively. You need merely specify L. L. BROWN papers. Your regular supplier of record books, forms and stationery knows them thoroughly. He will gladly recommend those best suited for your individual needs. L. L. Brown Paper Company, Adams, Massachusetts.

L. L. BROWN RECORD and LETTER PAPERS



(Continued from page 180)

all orders being priced. This gives the New York office a direct check on what our plant purchasing men are paying for merchandise.

We use a large number of forms. Practically all of the forms are purchased from outside sources, largely companies who specialize in forms design and printing, and general printing houses. The forms include snap-outs and one-time carbon forms, and the numerous forms that are used in accounting, production, engineering, the laboratory, maintenance, purchasing and other departments. Most of the forms purchasing is done under the supervision of the New York headquarters. Many times, however, we have found that our local purchasing agents are able to purchase forms for a better price or on better delivery than we can effect in the New York metropolitan area.

Right now we are making a study of the many forms we use, looking to the elimination of those that are unnecessary, and combining forms which serve dual purposes. We are mindful that with changing business conditions, changing manufacturing operations, and constantly changing governmental regulations, forms become obsolete, and hence of little value even as scrap. Our preliminary studies show that big savings can be made by forms control. Though forms are administrative tools of the utmost importance, it is easy to overdo their use. We are now developing a forms committee which will weigh the relative importance of suggested forms, as well as re-orders. Too often forms are born of a whim rather than a practical need. These not only represent a direct printing waste, but unnecessary forms can often be the cause of high clerical costs that are unwarranted.

We try to give every salesman who calls on us a "break." If we are not interested in what he has to offer, we frankly advise him so. On the other hand, if we find that a man has given thought to our requirements, and has some new feature to bring to our attention, the purchasing department is glad to give him necessary time to present his story to us or to the department head concerned.

Frankly, the percentage of stationary and office equipment salesmen who come to see us with something really good to offer, is but a small number of those who call on us. If I were running a sales de-

partment, I would see to it that every time a salesman visited a prospect, that he have something of interest to the people he is calling on. I realize that this is a big order, yet I am sure it would prove more profitable to both the buyer and the seller. Among other things, salesmen should realize that the industrial office has no need for many of the things that have strictly a merchandising application or small office use. Many salesmen who call on us try to interest us in appurtenances and materials that are in no way applicable to our requirements.

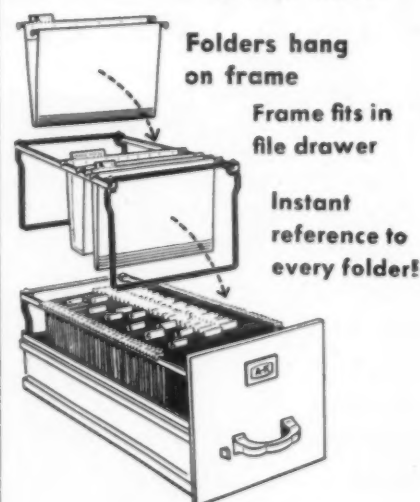
Printing offers many opportunities for savings. Where there is a big volume of printing to be purchased, the buying should be in the hands of a buyer who is familiar with paper, printers and their equipment, and the widely fluctuating market that exists in the printing field, especially in a metropolitan area.

In conclusion, I want to emphasize that through the application of sound purchasing principles, important savings are possible in the procurement of office equipment and supplies.

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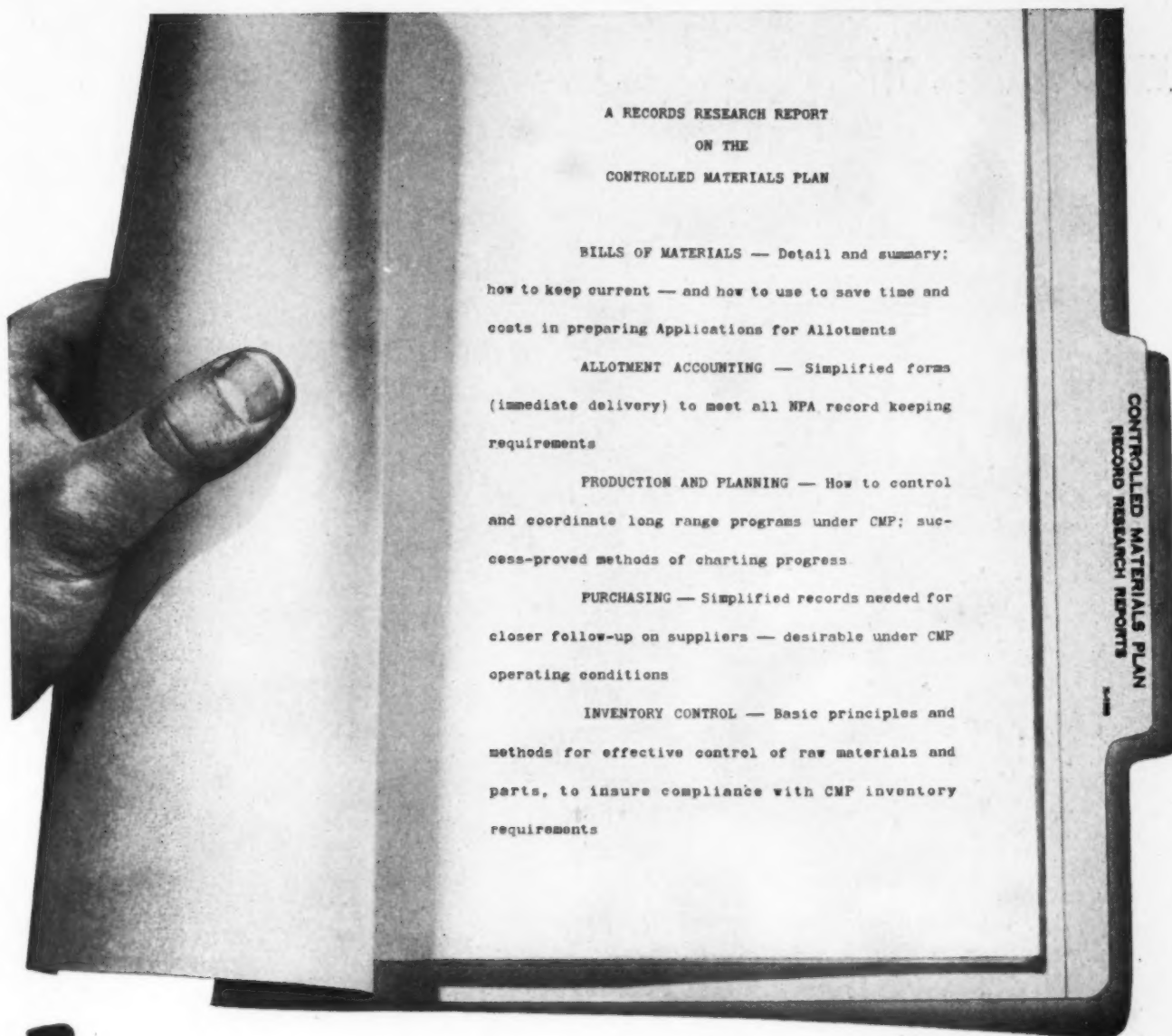
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If you have received controlled material allotments under CMP, either as a prime consumer direct from a Government Agency, or as a secondary consumer receiving allotments from your customers, here is a practical manual that will simplify your paper work under CMP. It not only shows you, step by step, dozens of ways to save on clerical routine, but more important still, it lays the groundwork for getting the *end result* you want — a properly balanced, uninterrupted flow of materials to meet your requirements *on schedule*. At the same time it sets up all the records you need to prove compliance with CMP regulations. Phone our nearest office or mail the coupon for your free copy.

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Room 1290 315 Fourth Ave., New York 10, N.Y.

Please furnish, free, a copy of X-1203, "Records Research Report on CMP".

Name

Title

Company

Street

City Zone

State

For your needs
we have no reason
to recommend anything but
the right machines and systems.
We make them all

How to KNOW

WHAT
WHY
WHEN
WHERE

to buy



supplies all the facts, on one four-page form
...signals every action, justifies every purchase

With Postindex, you *simplify* purchase control—save time, save money. All the facts and figures you need are ready for instant use. Facts on past and present consumption, specific use, location, inventory, competitive prices, shipping and deliveries—the running record of every item ordered by you, detailed to fit your exact requirements.

The system is completely flexible. Postindex forms can be set up to cover any and every useful point—requisition numbers, unit prices, discounts, freight costs or whatever! Investigate. Postindex visible files *keep you informed*—instantly, accurately, constantly.

For interesting details and typical forms write TODAY to Postindex Division, Art Metal Construction Company, Jamestown, N. Y.

Postindex
VISIBLE FILES

Fine points exclusive with
POSTINDEX bring new speed,
ease, accuracy, economy—

- four sides to write on
- self-aligning trunnion wire
- easy shifting
- constant visibility
- optional multiple records
- perfect lay-back

"There's an **Art** to Better Record Control"



WIDE VARIETY OF EQUIPMENT IN NEW MORRIS CATALOG

The latest catalog of Bert M. Morris Company covers a large number of important accessories for the modern office. Among the items detailed are the popular Morriset desk pen sets, fountain pen sets, phone rest, electric pencil sharpener, memo pad holders, and several other attractive products of great use in the office. Complete information, including specimens of type faces, is offered on imprinting the equipment with company or individual names. Morris is located at 8651 West Third Street, Los Angeles 48, Calif.

ROTARY FILE IMPROVED FOR MAXIMUM EFFICIENCY

New improvements on the Ferris rotary file are said to achieve maximum efficiency at lowest cost. Removable baskets in balanced trays rotate either way by fingertip control. Freedom from belts, punch cards, slots, rods or any fasten-in device, says Ferris, insures complete accessibility to one or a dozen cards instantly and allows cross filing. Present cards can be used and transferred quickly and easily. The file has a capacity of up to 13,000 cards in standard models, and occupies only three square feet of floor space.

Among other features are: hand brake which locks the wheel in any position even after several trays are removed; an attached posting shelf which folds completely out of way when not in use; new compression follower-block for tabulating cards.

Ferris Rotary File is located at 244 Great Meadows Rd., Stratford, Conn.

NAMED CHAIRMAN OF BOARD NATIONAL SALES EXECUTIVES

Al N. Seares, vice president and director of domestic sales and services, Remington Rand Inc., New York, was elected chairman of the board of directors of the National Sales Executives at their recent annual meeting in New York.

Results of a survey among 100 leading companies by the National Sales Executives were announced at the Convention, disclosing that sales executives anticipate an increase of 18.6 per cent in business this year. An overwhelming majority of those polled, however, look for a tapering-off of sales gains during the latter part of the year.

W. G. Power, advertising manager of Chevrolet motor division of General Motors, warned of the need to keep selling regardless of the lure of defense program slow-ups. Mr. Power pointed out that selling can be relied on to get easier or even to remain as easy as it has been. With



Al N. Seares, newly elected chairman of board of directors of National Sales Executives, (left) being congratulated by Arthur A. Hood, retiring chairman (right) with Robert A. Whitney, president (center).

70% of the people selling automobiles having entered the business since 1941 and thus being inexperienced in competitive selling, the result, according to Power, is an automobile sales force woefully unprepared to do tough selling. This condition in the automobile business, he said, is typical of nearly every field of business today.

GEORGE E. WILLIAMSON

George E. Williamson, president and chairman of the board of the Strathmore Paper Co., passed away Tuesday July 3 in Des Moines, Iowa, while on a business trip.

Mr. Williamson joined the Strathmore Paper Company in West Springfield, Mass., in November 1911 as chief engineer, which position he held until he was appointed assistant to the president in February 1926. In 1928 he was elected treasurer, remaining in that position until December 1942 when he was made vice president and treasurer. In February 1946 he was elected president. He had been a director since 1926.

Mr. Williamson was also president of Premoid Products Inc. of West Springfield, Mass., and was a director of the Rising Paper Co., the Old Colony Envelope Co., The

(Please turn to page 186)

Profit and Loss

PHOTOGRAPHED
IN TRACER LIGHT



The LITHOSTRIP WAY 1-2-3! Type, tear off, zip out carbons as a unit!



The OLD WAY to produce 1 set of forms:
(1) Collate (2) Interleave with carbons (3) Jog Sheets (4) Insert (5) Align (6) Turn roller (7) Type (8) Remove forms (9) Deleave carbons.

REVEALS SAVING with AMERICAN LITHOFOLD

LITHOSTRIP

"Planned" Business Forms!

3 moves instead of 9... *proved* by the photographer's new art of exposing the paths of motion... under actual working conditions.

American LITHOSTRIP Continuous Forms wipe out *useless* time and work in record-keeping... eliminate six wasteful moves! Distribution and control are simplified and speeded. A SINGLE typing produces records for all departments... fast!

Get your copy of this new brochure showing business forms **TIME AND MOTION STUDY IN LIGHTS, FREE!**



AMERICAN LITHOFOLD CORP.
500 Bittner Street • St. Louis 15, Missouri

Without obligation, SEND ME the revealing TIME AND MOTION STUDY showing how we can save important time, work and money with LITHOSTRIP "PLANNED" BUSINESS FORMS.

COMPANY NAME

ADDRESS

CITY ZONE STATE

SIGNATURE

Prominent Users of Strathmore Letterhead Papers: No. 95 of a Series



With painstaking skill an expert craftsman makes a delicate adjustment on a Tycos Sphygmomanometer, the Taylor-made blood pressure measurement instrument that is used in all parts of the world.



QUALITY...

a precision tool for building reputation

In the Fall of 1851 two young men pooled their slender resources and their considerable skills and energies, and in the best American tradition started a one-room business manufacturing thermometers.

Now, 100 years later, Taylor Instrument Companies, of Rochester, New York, is acknowledged to be one of the leading manufacturers in its field—producing 8000 variations in controls and measuring instruments for industry, science and the home.

Such a company, schooled in a tradition of precision perfection, mirrors its background of quality in every phase of its business . . . selects the character of a Strathmore paper for its special centennial year correspondence, as it has for its letterhead for many years.

Strathmore quality in a letterhead gives a "precision" impression, scrupulously interpreting to the reader a basic soundness and tradition. Let your supplier submit new designs, or proofs of your present letterhead, on Strathmore paper. Weigh the results against the effect of your present sheet. You'll find that the quality expressed by Strathmore papers is a really tangible thing.

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Writing, Strathmore Bond. Envelopes to match converted by the Old Colony Envelope Company, Westfield, Mass.

STRATHMORE MAKERS OF FINE PAPERS

Strathmore Paper Company, West Springfield, Massachusetts

(Continued from page 185)

Springfield (Mass.) National Bank and the Boston Manufacturers Mutual Fire Insurance Company. Also, he was a vice president and member of the executive committee of the American Paper & Pulp Association, as well as a member of the executive committee of both the Writing Paper Manufacturers Association and the Associated Industries of Massachusetts. He also had been very active in varied civic and community organizations.

PERFORATED GUMMED LABEL SHEETS

Bison Research Service, Buffalo, Minn., has made available its perforated label sheets in both the 33-on-sheet and 24-on-sheet style. The labels, made of high quality finished paper are used for speedy single and multiple addressing, and in many other applications. Sample sheets and hints on how the labels may best be used are available from the company.

GLOBE-WERNICKE INTRODUCES MODULAR OFFICE EQUIPMENT

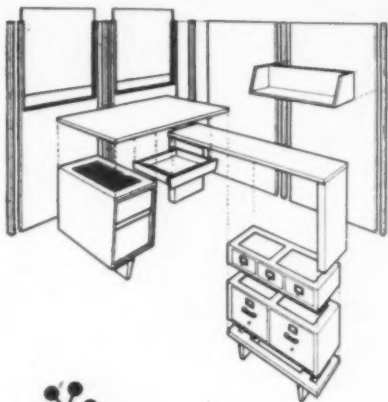


A new development in wood modular office equipment was presented by Globe-Wernicke Co., Cincinnati, O., to visitors at the recent National Office Management Association exposition.

Major features of Globe-Wernicke's new line, called Techniplan, are savings in space, time and money in the operation of business offices. The equipment occupies 18.3% less floor area, in space which is much better organized for greater work efficiency.

Techniplan arrangements are built around desk and center runners assembled with various standard sectional units for letter files, map and drawing cabinets, and card index cases. Literally hundreds of efficient, space-saving arrangements are possible. A patented, interlocking feature makes it easy for anyone to assemble the desired units and to make changes as required.

Techniplan is the result of more than two years of research and engineering. Globe-Wernicke's accomplished goal for Techniplan is that these units be completely flexible, demountable and mobile, creating a



This exploded view shows Globe-Wernicke Techniplan elements: Partitions and posts, desk pedestal, desk top, center draw, center runner, full horizontal file units and base with island legs.

functional office with a maximum utilization of space. Techniplan now offers the architect, office planner or designer a new tool which enables him to lay out space for stenographic, bookkeeping, sales, engineering, junior executive, and clerical units of all kinds, with maximum space-saving and work efficiency. It allows quick reassembly for expansion, change in work flow, removal to new quarters or other reasons which make rearrangements necessary or desirable.

Techniplan eliminates the waste space of standard office equipment, while adding complete flexibility. The units have many functional features; flexibility arranged work area, filing compartment and drawer space, movable book shelves, concealed waste baskets, electrical connections for integral fluorescent trough lighting, business machines, inter-com systems and telephones. Partition combinations can be arranged to secure semi-privacy or complete privacy. They are furnished in all wood and wood and glass in three heights. All modular units including partition sections have leveling adjustments to compensate for unevenness of the floor.

**NAMED INDUSTRIAL SALES
DIRECTOR FOR PARKER PEN CO.**

The Parker Pen Company, Janesville, Wis., announced that W. B. Kaiser has been named industrial sales director.

Mr. Kaiser, a native of Minne-
(Please turn to page 188)

Writes **93,500 WORDS WITHOUT REFILLING**

Choose your own individual point style from the world's largest selection.

Point instantly renewable in case of damage.

"Ink-Locked" against accidental spillage. Can't leak. Won't flood.

Base holds 40 times more ink than regular fountain pen desk sets. Fill it once ... write for months.

Choose the right point for the way **YOU** write.

2550 Bookkeeping
2556 Fine writing
9668 General writing
2968 Broad writing
9461 Sure Manifold
9314M Medium stub

Esterbrook® 444 **DESK PEN SET**

The 444 is a new, *better* desk pen. It writes your way ... because you fit it with the particular point made especially to do your *kind* of writing, the way you write it. Select your point and get a personal demonstration at any pen counter.

THE ESTERBROOK PEN COMPANY
CAMDEN 1, NEW JERSEY

Copyright 1951, The Esterbrook Pen Company

How to have an efficient MAIL ROOM

for only a
few dollars!



Send for this illustrated catalog today!

Corbin Mail Handling Equipment is used in the majority of post offices throughout the country . . . it is speeding up the mail sorting operation in mail rooms of many nationally-known business firms, schools and hospitals.

You, too, can have efficient Corbin Mail Handling Equipment in your office. You get equipment that is sturdily and attractively made from selected hardwoods. You get the benefit of our years of experience, because we will gladly help you choose equipment that meets your needs exactly. Yet, the cost is surprisingly low!

For more complete details on Corbin Mail Handling Equipment and other low-cost Corbin wood products, write today for our new illustrated catalog! There is no obligation, of course.



PS

Corbin Cabinet Lock — Wood Products Division
The American Hardware Corporation
New Britain, Conn.

Please send me your new illustrated catalog of
Corbin Mail Handling Equipment and other
Corbin Wood Products.

Name

Firm

Address

(Continued from page 187)

sota, has been with the company for twelve years, and will fill a post formerly held by Earl B. Harvey, who retired after lengthy illness. Prior to Mr. Kaiser's appointment, his activities included key managerial duties in the pen company's sales division.

NATIONAL EXPANDS PLANT

A program of modernization and expansion of plant and office facilities has been completed by the National Pencil Company, at Shelbyville, Tenn. National manufactures Cedar King, Corsair and Skytint pencils, and many other types of wood encased pencil products.



Nationals expanded plant

As part of the expansion program a large new building has been added to existing structures, which have been completely air conditioned, re-furnished and decorated. A large number of modern pencil making machines have been added to the production facilities.

ANSWERS TO RECORD KEEPING UNDER CMP

The answers to many record keeping problems facing manufacturers operating under the Controlled Materials Plan are described in a new booklet available from Remington Rand Inc. This practical manual outlines methods for simplifying paper work by laying the ground work for getting the desired result, a properly balanced and uninterrupted flow of materials to meet production requirements on schedule. It shows dozens of ways to save on clerical routine, as well as incorporating information necessary for the correct set-up of records required for efficient operation under CMP regulations.

For those manufacturers who find that production holdups and counter regulations procedures are being caused by lack of vital detailed information. The release outlines simplified and effective record systems that should prove of interest. The brochure shows how standard forms for maintaining Al



50% of all executives see me*.

49% are influenced by me in reading my contents*.

You can increase materially the reading of your direct mail by attractive and unusual envelopes designed by Sheppard.

Sheppard
ENVELOPE CO.

1 Envelope Terrace
Worcester 4, Mass.

*TIDE The Newsmagazine for Advertising Executives



An Omega lead takes a lot of pressure without breaking . . . thin, lead holds a needle point, makes clean, sharp figures with lightest pressure. 24 brilliant colors, ends colored for quick selection. Ask for sample on your business letterhead.

The Omega is a Tryrex Pencil — shaped to fit your hand — will not roll.

RICHARD BEST PENCIL CO.
Dept. P Springfield, N. J.

OMEGA
COLOR PENCILS

Makers of
ROYAL SCOT and FUTURA Pencils

lotment Accounting Records can be made available quickly in small quantities. It lists effective methods of "exploding" parts and materials needs, thereby correlating with planned production the regulations concerning controlled materials. Methods of establishing long range production schedules are balanced with procedures of maintaining control over every phrase of manufacturing.

Basic principles for controlling receipts of raw materials and parts in compliance with CMP Reg. #2 on inventory are outlined. Advice is included on how to store and protect supporting records on all CMP transactions, as required by law.

Based on the vast practical experience of Remington Rand Inc. in developing similar record procedures during World War II, the pamphlet is designed to help modern business during the present period of emergency. Request booklet X-1203 "Record Research Report on CMP", from Management Controls Division, Remington Rand Inc., 315 Fourth Avenue, New York 10, N. Y.

HONOR VICE PRESIDENT PRICE OF EAGLE PENCIL CO.



Officials of three prominent firms of the lead pencil industry honor a business rival, Herman Price, vice president and general manager of the Eagle Pencil Company, Inc., at a testimonial dinner given at the Links Country Club, Roslyn, L. I. The pencil companies paid tribute to Mr. Price's activities over a span of fifty years which they felt were a great credit to the industry and to the general business community, and presented him with a plaque to commemorate the occasion. Celebrants at the dinner were: (left to right) Richard Lewisohn, Jr., president, Amercian Pencil Co., Mr. Price the guest of honor, Edward M. Cabanis, president, Joseph Dixon Crucible Co., and Thomas R. Rudel, president, Eberhard Faber Co.

(Please turn to page 190)

ANY COMBINATION YOU NEED ...YOU GET!

with **UARCO**
fanfold carbonset
forms!



The word "no" doesn't exist at Uarco in regard to tough Fanfold Form problems. Any combination you need, you get.

For instance, *you* might want the fanfolded edges fastened by glue or thread to hold together for later entries. You can have it! You might want them all that way, or just part. You may need loose carbons between the top two copies: *fastened* carbon between the next three. It's done! What you want, Uarco provides.

You get economy, too, from Uarco Fanfold Carbonset; even if you use no more than 25,000 forms a year. Another thing: you use Fanfold on any writing machine in your office!

Call your Uarco Representative. He fits Fanfold Carbonset to any forms requirements . . . shows where they save for *you*!



Business Forms

Factories: Chicago; Cleveland; Oakland;
Deep River, Connecticut; Watseka, Illinois
Sales Representatives in All Principal Cities.

UARCO Incorporated
Room 1619, 141 W. Jackson Blvd.
Chicago 4, Illinois

Please send me samples of Uarco Fanfold Carbonset Forms.

Name.....

Address.....

Firm.....

City and State.....



**Here is something
you can do about
getting and keeping
personnel...**



This employee problem was hitting us hard . . . personnel turnover was climbing and many jobs just couldn't be filled. As Personnel Manager I was on the spot. Then we worked out an office equipment replacement plan with a Security Steel representative. Their CRESTLINE Secretarial and Office Desks have answered our problem . . . turnover has dropped almost to the vanishing point and we are getting the top-notch workers we need. It makes sense . . . your good office workers today are vitally interested in the equipment they are given to work with. We surveyed the field. Our choice was CRESTLINE. It solved our problem.

Crest LINE

SECURITY STEEL EQUIPMENT CORP.

AVENEL, NEW JERSEY



NO MORE "DIMENSIONAL HEADACHES"

American Standard Size Designation for
Index Cards and Record-Keeping Cards

by

Lester Brigham*

Producers, distributors, and users of office supplies, alike, should welcome as particularly good news the fact that an American Standard for the order of designating the dimensions of index cards and record-keeping cards has been officially established, at last.

The nomenclature for this most important card factor, has in the past, been chaotic. Producers and distributors have used *both* the vertical and the horizontal dimension as the first of the two listed dimensions; namely, "3 x 5" or "5 x 3" for a card five inches wide, horizontally, and three inches deep, vertically.

Buyers when ordering, and distributors when interpreting and filling orders, have had to spend a great amount of unnecessary time in making sure whether the requirements were expressed with the vertical or horizontal dimension as the first one listed.

Those responsible for the recently accepted recommendation that the horizontal dimension be listed first for all sizes of cards have advanced definite and logical reasons for this recommendation. Simply expressed, these are as follows:

(1) The average user of forms, either printed or ruled or combinations of both—in cards or sheets—almost always thinks first in terms of the horizontal dimension when designing these forms for special use. This consideration applies to columnar ruled forms, invoices, statements, ledger cards, sales and purchase order forms, and nearly all other of the numerous classes of record-keeping media. Furthermore, the great majority of entries made on these forms, either typed or handwritten, are horizontal (from left to right) and *not* vertical (from top to bottom).

(2) Regardless of the width of the form, one usually thinks in terms of the horizontal dimension first—even in sizes as large as 17 x 11 in. or 22 x 11 in., for example. This is due to the fact that this dimension governs the utility value of the form from the standpoint of the over-all spread required, the total number of columns to be allocated, the respective widths of these

columns, and similar considerations.

(3) The vertical space requirement can be considered, quite logically, as of secondary importance. This is because it is determined usually by the number of lines of horizontal entries one wishes to make on the form and the amount of space to be left between the lines.

Remington Rand and Yawman & Erbe, two of the largest manufacturers of index cards, have listed the horizontal dimension first in their catalogs and price lists for quite some time, as have numerous smaller producers. On the other hand, the predominating practice, heretofore, among the great majority of producers has been to list the vertical dimension first, regardless of sizes of the card. This probably resulted from the fact that naming the vertical or binding side of ring books and post binders first has been generally accepted standard practice in the ring book and post binder industry for quite some time.

However, inasmuch as there is no real or close "family relationship" between index and record-keeping cards and binders, there would seem to be no reason to assume that the new standard for the nomenclature of card dimensions need in any way contradict or conflict with the practice of naming the vertical dimension first in the case of ring books and post binders.

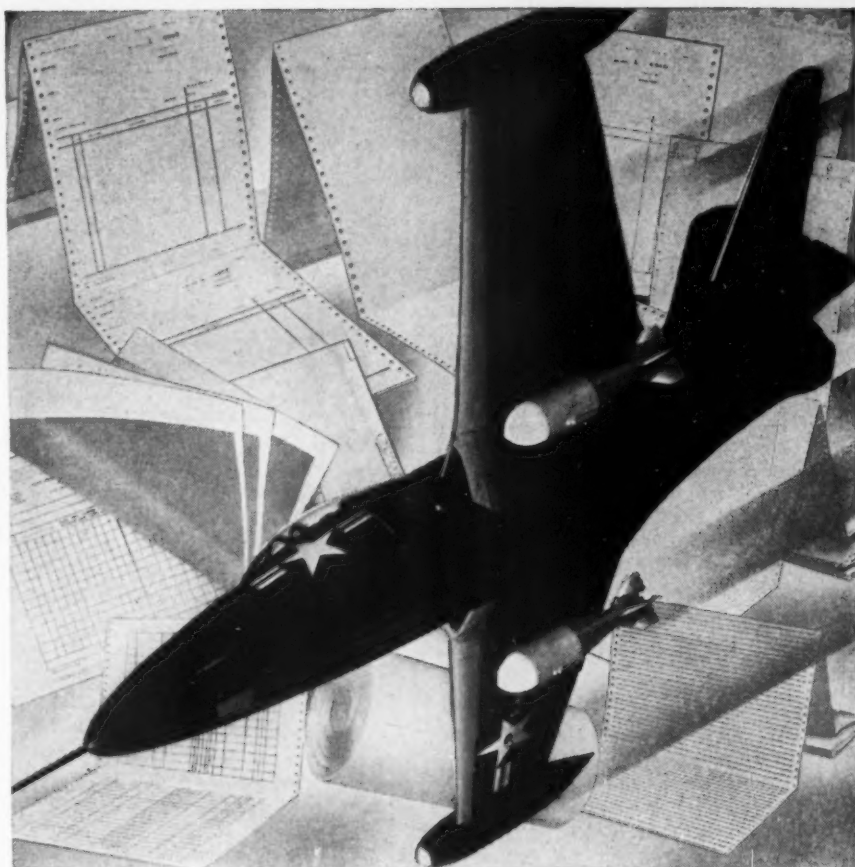
**Mr. Brigham, General Office Manager, American Optical Company, is Vice-Chairman of Subcommittee 4 on Office Supplies of the Sectional Committee on Office Standards, X2 and was chairman of the technical subgroup which developed the standard.*

Mr. Brigham represents the National Office Management Association, sponsor for this project. Other members of the subgroup are: E. E. Sides, Moore Business Forms, Inc., Worcester, Mass.; K. G. A. Andersson, Norton Co., Worcester, Mass.; and D. L. Brennan, Reed-Prentice Corp., Worcester, Mass.

SELL CORPORATION MOVES INTO NEW HOME

The Sell Corporation, filing supplies manufacturers, has moved into its new plant at 500 South Clinton Street, Chicago, Ill., where the increased plant and warehouse area and new machinery installations enables an increase of almost double previous production.

(Please turn to page 192)



Navy "Panther" Jet Fighter—Manufactured by Grumman Aircraft Eng. Corp.

SPEED—important in Paper Work, too!

Company after company has put jet action into its paper work production—licked delays—eliminated errors—by incorporating Colitho Offset Master Plates in its business systems forms.

Any form can be preprinted on Colitho plates and you handle them like ordinary forms—fill them out by hand, typewriter, or other business writing machine—and you do it only once. Then, on any offset duplicator, the Colitho plate quickly gives you hundreds, even thousands of original-like copies—clean and easy to read.

Colitho plates are supplied blank, or they can be printed with any form, ready for your own fill-in—as single plates—part of a "snap-out" manifold set—or continuous, for use on tabulator, teletype, formwriter, or addressograph.

If you're looking for economies and increased efficiency in your plant and office, don't overlook the savings you can

find in your business paper work by using Colitho Offset Master Plates.

Let us show you how they are being used in purchasing, engineering, production, auditing, tabulating and estimating. Write for the Colitho sample brochure—now!



COLUMBIA RIBBON & CARBON MFG. CO., Inc.
Main Office & Factory:

150-8 Herb Hill Road, Glen Cove, L. I., New York
New York Sales and Export: 58-64 West 40th Street
Branch Offices and Distributors in principal cities
Consult your local Telephone Classified Directory

Colitho

OFFSET MASTER PLATES

Colitho plates and supplies make any offset duplicator a better duplicator.

COLUMBIA RIBBON & CARBON MFG. CO., Inc.
150-8 Herb Hill Road, Glen Cove, L. I., New York

28

Please send me samples of Colitho Masters.

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____
Make of Duplicator _____ Model _____
Plate Size _____ Clamp Style _____

...For
letterheads of
distinction
and quality



IT ISN'T SURPRISING—THAT PRINTERS SAY RISING!

If you have a stationery problem take it to your printer. He handles paper every day and can solve your problem with one word—Rising.

He knows how this superb paper acts under all conditions. And will unhesitatingly recommend Rising Bond for letterheads and forms.

Rising Bond

- is 25% rag
- comes in 4 weights
- is available in white and 5 colors
- has envelopes in 6 sizes
- And has an excellent printing surface for engraving, lithography, gravure or letterpress

WHEN YOU WANT TO KNOW
...GO TO AN EXPERT!

Rising Papers

ASK YOUR PRINTER
...HE KNOWS PAPER

Rising Paper Company, Housatonic, Mass.

**AMERICAN STANDARD SIMPLIFIES
DESK AND TABLE SIZES**

The first American Standard to coordinate and simplify the sizes of desks and tables used in the thousands of business offices all over the United States has just been approved by the American Standards Association, 70 East 45 Street, New York 17, N. Y. The American Standard Dimensions of Desks and Tables for General Office Use provides a range of overall dimensions for metal and wood desks and tables commonly used in the modern business office. However, the larger executive desks—over 60 inches in width—are not covered.

The standard provides for five widths and two depths for metal desks, and six widths and two depths for wood desks. This will be a great aid to office managers in reducing the number and variety of equipment used and simplifying ordering and reordering of merchandise. It also promotes a more flexible furniture arrangement in an office, encouraging and facilitating interchange of personnel and equipment.

The standard defines such terms as general office desks and tables;



**In Erasing, Too,
MAGIC IS
AS MAGIC DOES**

There's no rabbit trick—no magic—when it comes to finding the best way to save time and tempers when mistakes are made in handwriting, typing and business machine impressions.

Superb quality Weldon Roberts Erasers, efficiently sized and shaped for neatest, fastest work save the entire re-writing of letters and records that could be spoiled by "messy" erasing.

There are many styles in time-saving Weldon Roberts Erasers especially suited to your requirements. Ask your dealer for recommendations or write us.

WELDON ROBERTS RUBBER CO., NEWARK 7, N. J.
World's Eraser Specialists

121 ELLIPTIC Soft gray eraser in handy elliptical shape for pencil or ink erasures on all types of work.



Weldon Roberts Erasers
Correct Mistakes in Any Language

**IF YOU ARE NOT NOW RECEIVING A
PERSONAL COPY OF PURCHASING
EACH MONTH**

You are missing in every issue of PURCHASING seven services that would cost hundreds of dollars if bought separately—

1. Washington Report for Purchasing Agents
2. Poll of Purchasing Opinion on Current Purchasing problems
3. Price, Production, Inventory Statistical Analysis that help you fortell price changes
4. Inventory (illustrated) of new products
5. Forms that lubricate purchasing department operation
6. Free catalog service
7. Purchasing Legal Service—interpretation of latest legal decisions affecting purchasing

Fortune favors the man well-informed in his own profession.

You can get the full benefit from the wealth of valuable information in PURCHASING by receiving it personally each month. Just fill in, clip, and mail this coupon.

PURCHASING, 205 E. 42nd St.
New York 17, N. Y.

So that I will receive PURCHASING without delay each month, and in order that I may keep and clip it, send it to me personally as noted below—\$4 for one year.

Mr.
Title
Company
Address

single-pedestal desks; double-pedestal desks; width; depth; front; height; right and left designations.

Height is defined as the distance of the extreme upper working surface of the desk or table top from the floor. The standard provides that this height is to be either 29 inches or 30¼ inches if fixed, or adjustable between these levels. A tolerance of plus or minus ¼ inch is permitted on both the height and overall top dimensions.

A committee sponsored by the National Office Management Association under the procedures of the American Standards Association developed this standard.

Copies of the American Standard Dimensions of Desks and Tables for General Office Use, X2.1.1-1951, may be obtained from the American Standards Association, 70 East 45 Street, New York 17, N. Y., at 25 cents per copy.

PERMITS USE OF COATED OR CARD STOCK ON DUPLICATORS

Paper stocks heretofore considered not suitable for use with office duplicating machines can now be run on the machines and printed with a quality approaching that of lithographers, according to Michael Lith Co., 145 West 45th St., New York.

Michael's new device, called the Anti-Offset Jobmaster, sprays a very fine dry powder on every sheet that comes out of the Multilith or Davidson duplicating machine, making an invisible coating. The powder keeps the sheets separated to prevent offsetting, a major deterrent in the use of coated and card stock.

INTER-PLANT PHONE SYSTEM SAVES TIME AND MONEY

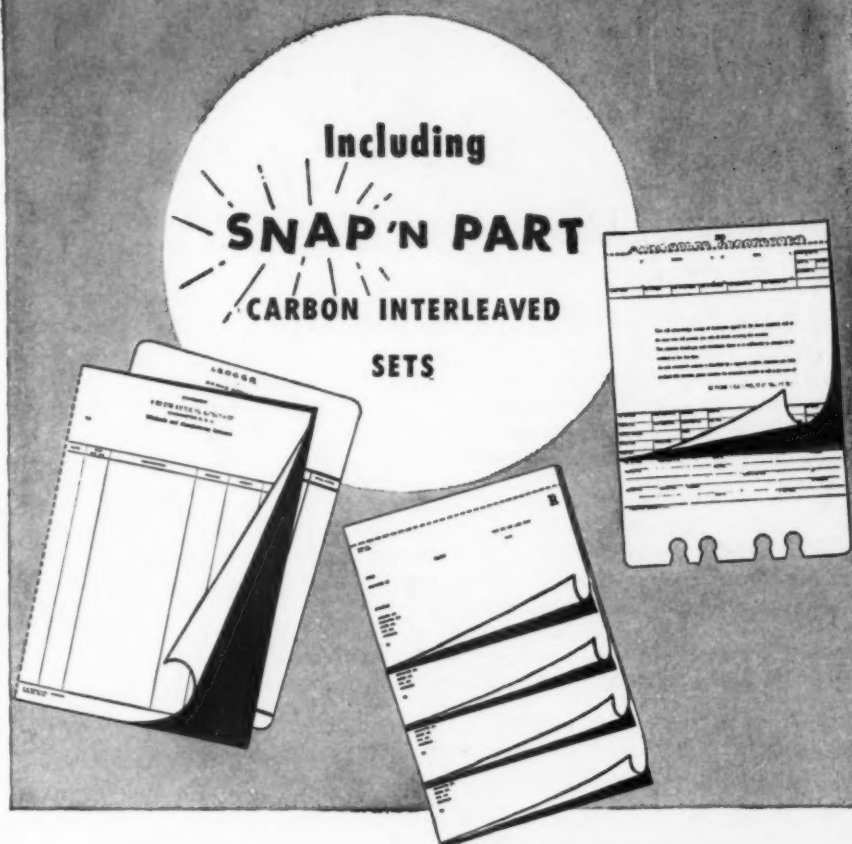
Confronted with the delays and complaints incident to an overloaded commercial telephone installation, and unavailability of additional trunk lines with the established number, the Jacqua Company, Advertising, Grand Rapids, Mich. made a survey of requirements to meet the needs for internal calls and outside service. Consideration was given to the various factors and costs in connection with increased commercial trunk lines and local stations, and the advantages of a private inside system.

It was found that in order to increase the number of trunk lines and local stations it would be necessary to install costly equipment, and also sign a contract calling for a

(Please turn to page 194)

FEDERAL IS TOPS

ON COMPLEX BUSINESS FORMS



If you need complicated carbon-interleaved forms of any size or combination of sizes to speed up distribution of information, cut down clerical errors, reduce your record-keeping costs . . . call on Federal! We design and print forms to solve your every business problem.

Federal forms are precision-printed on the fastest, most modern machines available. Federal service is prompt. Federal prices are attractive. Ask us to quote on your next job.

Some Federal Specialties: Multiple carbon forms . . . carbon - interleaved statements . . . voucher and payroll checks . . . forms requiring spot carbon or die-cut carbon . . . business machine forms!

FEDERAL
Business Products, Inc.

PRINTERS OF BUSINESS FORMS SINCE 1926

90 GOLD ST. • NEW YORK 38 • CO 7-8850

IDEAS TO KEEP PRODUCTION FLOWING

Standard Register

Paperwork Simplification



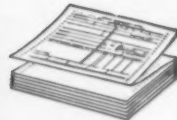
Dependable working papers help keep production humming.

FOUR SYSTEMS of records . . . handwritten on Standard Registers in the plant of a Texas aircraft corporation . . . operate to insure that all parts and materials fabricated or purchased for scheduled assembly—are ready when needed. These basic *tools of management* are helping put added fighting power in the Korean air—see PS. 23.*

Paperwork Simplification is being directed today to helping our customers get the most out of present systems. Representatives, analysts, form designers, servicemen are *re-examining* Standard Register systems . . . in the light of new conditions . . . against these prime objectives:

- A. Develop the best procedure—to provide *needed* facts on time to all concerned, with minimum clerical work.
- B. Simplify the writing method—to get more out of present business machines, save manpower . . . by means of auxiliary devices, form handling equipment, etc.
- C. Design the most efficient form. A *Material Requisition*, for instance (above case) doubles as a *Purchase Requisition* for parts not in stock.

* "PS." ideas and information are available to all. Write for copies of *Paperwork Simplification* (PS.) free. The Standard Register Company, 408 Campbell St., Dayton 1, Ohio.



KANT-SLIP continuous forms

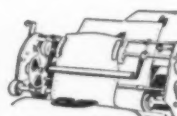


Feeding-aligning device: THE REGISTRATOR PLATEN



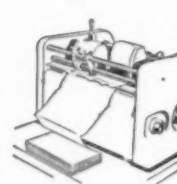
AUTOMATIC LINE FINDER

Advances form into new writing position in one motion



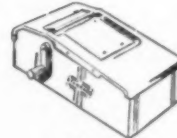
DUAL FEED

Registers 2 different forms for 1 continuous typing operation



BURSTER-IMPRINTERS

Sign, date, number, trim, tear off, stack Kant-Slip forms



FORM-FLOW REGISTERS

Better records . . . by hand



UNIT ZIPSET FORMS

Carbon interleaved

(Continued from page 193)
minimum payment of \$5000 for a five-year period. This payment was mandatory even though the proposed installation proved unsatisfactory and it was decided to discontinue it. In addition, it would have been necessary to build a vibration-proof room to house the automatic equipment, at a cost of \$1500. It would be necessary to arrange to heat the room. Also, there would have been a monthly charge of \$3.00 plus tax on each phone in the plant.



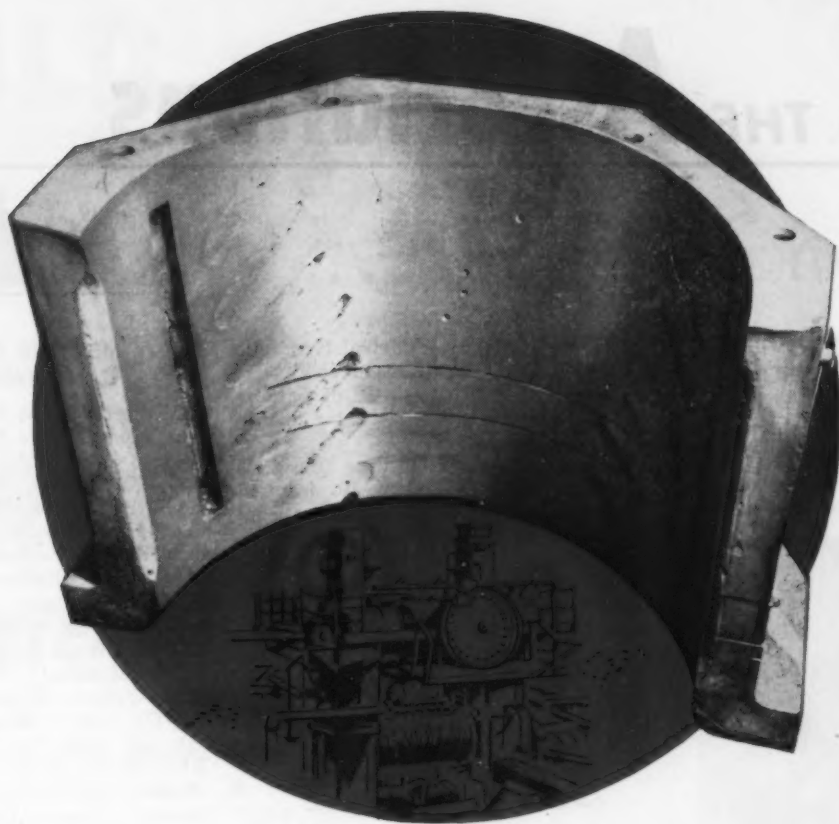
V. C. Stanley, Jr., account executive uses the new inter-com to talk with the production department.

The survey showed that 60% of the telephone calls were inside calls. Accordingly, it was decided to have a private inside system installed. The new system comprises 33 stations, with provision for a reserve of 15 stations which can be added as needed. Installation of the new system not only eliminated the need for the construction previously mentioned, and other extra costs, but made it possible to eliminate the commercial telephones previously used for inside calls. The new system has proved a time saver and a money saver. Calls are made by dialing numbers. If desired, the entire 33 stations can be connected for simultaneous communication. The system can be used for paging.

1 1 1

ERRATUM—Should be 20%

Item No. 421, June Issue of *Purchasing Magazine*, "Production Per Operator Increased 20%", about installation of adding machines by Spiegel, Inc., Chicago, which increased production 20% per operator, is accompanied by illustration with notation reading "20 Clerks—400% Increase". This obviously is in error, as regardless of the number of operators, the over-all increase is but 20%.



Price: \$.00029 Per Rolled Ton!

How National Bearing Division helps its customers lick costly maintenance problems

If there's one thing tougher than rolling mill service, it's the bearing you see above. This bearing was completely designed—from the inside out—by National Bearing Division and installed on a trial basis by one of the country's largest steel producers.

Result? Where the service life of bearings previously used averaged just 13 weeks, this bearing ran exactly 16 months and 4 days . . . rolling 1,315,000 tons! Maintenance expenses—including costs of replacement and down-time—were cut right to the bone.

This record-breaking performance was

made possible through a special design by National Bearing Division . . . a design involving alloy, bore, grease grooves, babbitt pockets and machining procedure. And, performance of these bearings is so consistently outstanding that the same mill now standardizes on their use.

We're proud of examples like this—because they show how effectively our facilities for Alloy Research and Engineering—combined with 75 years of practical application experience—make money-saving solutions to problems on . . .

Non-Ferrous Bearings and Castings—
As-Cast or Machined

Bronze Bars—
As-Cast or Machined;
Cored, Solid, Hexagon

Babbitt Metals—
For every type of
bearing service

AMERICAN

Brake Shoe

COMPANY

NATIONAL BEARING DIVISION

4940 Manchester Avenue • St. Louis 10, Mo.

PLANTS IN: ST. LOUIS, MO. • MEADVILLE, PA. • NILES, OHIO • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

AMONG THE Associations



MATTHEWS NAMED TO HEAD ST. LOUIS ASSOCIATION

Warren J. Matthews, assistant to the director of purchasing for Falstaff Brewing Corporation, was recently elected president of the Purchasing Agents Association of St. Louis. He succeeds



Warren J. Matthews

Fred J. Connell, Moloney Electric Company, who was named national director.

Others elected were: first vice-president, Robert H. Sperring, Union Electric Company; second vice-president, George S. Forbes, Century Electric Company; and treasurer, Charles D. Hoffman, A. Leschen and Sons Rope Company. F. J. Jost, McQuay-Norris Manufacturing Company, was re-elected secretary.

MORRISON HEADS NORTHERN CALIFORNIA ASSOCIATION

H. R. Morrison, district purchasing agent, Union Oil Company of California, was elected president of the Purchasing Agents Association of Northern California, at the annual meeting held June 21.

Other officers elected to serve with Mr. Morrison are H. L. Davison, Cutter Laboratories, Berkeley, first vice-president; W. S. Floyd, Shell Oil Company, second vice-president; E. B. Donaldson, Stauffer Chemical Co., secretary; Wm. Hunrick, City of Berkeley, treasurer. Directors elected were H. W. Christensen, Columbia Steel Co.; L. G. Baker, University of California at Berkeley; R. H. Chase, Shell Development Co., Emeryville; P. G. Duffy, Leland Stanford Junior University; J. E. Leonard, Zellerbach Paper Co., Oakland; W. G. Owen, W. P. Fuller & Co.; W. G. Watt, California & Hawaiian Sugar Refining

Corp., Ltd. Arthur J. Melka, Hydraulic Dredging Co., Ltd., Oakland and C. T. Hofmeister, Standard Oil Co of California, were elected to serve on the finance committee.

H. W. Christensen, retiring president, presided at the meeting. Also featured was the presentation by the Educational Committee of the Association of the C. W. Whitney Memorial Award upon Robert Francis Kerley. Mr. Kerley, a student in the School of Business Administration, University of California at Berkeley, had been judged as the most likely member of his class to succeed in purchasing.

SYRACUSE & CENTRAL N. Y. ASSN. HOLDS CLAMBAKE

The annual clambake and summer party of the Purchasing Agents Association of Syracuse and Central New York was held on Thursday, July 26 at Hinerwadel's Grove, North Syracuse, N. Y.

MEMBERS OF 1951-52 CANADIAN COUNCIL

Members of the Council of Canadian Purchasing Agents Associations for 1951-52 are:

B. K. Sprung, Winnipeg, president; J. F. Stephenson, Hamilton, vice-president; H. T. Sprang, Toronto, past president; F. B. Brookbanks, Toronto, treasurer; C. F. Fullerton, 175 Jarvis St., Toronto, secretary.

Members representing the local associations are: C. E. Stiles and H. P. Millar, Montreal; F. B. Brookbanks and A. L. Francis, Toronto; H. M. Everett and Cy. Barlow, Hamilton; C. H. Randall and Alex Yule, Niagara District; R. J. McGinnis and W. N. Hemphill, Central Ontario; W. C. Pink and J. A. Rossiter, Western Ontario; R. G. Millin and J. E. Fox, Essex Kent; J. M. Hanson and George Frehs, Winnipeg; G. D. Robarts and G. A. Clash, Edmonton; James McMillan, and W. E. Wootton, Calgary.

New York Association Officers for 1951-52



Recently elected officers of the Purchasing Agents Association of New York are, front row (l. to r.): Edward B. Fielis, treasurer; Michael D. MacBurney, Barrett Division, Allied Chemical & Dye Corporation, vice-president; Edward A. Bantel, National Bureau of Casualty Underwriters, president; Maurice E. Ash, Merck & Co., Inc., member of executive committee; J. H. Leonard, secretary, Back row, (l. to r.): Harry F. Barnett, Polychemicals Department, E. I. duPont de Nemours & Company, Inc., member of the executive committee; Walter M. Hoffman, American Oil & Supply Company, member of the executive committee; George Z. Turadian, A. & M. Karageusian, Inc., national director. John F. Snedeker, Binney & Smith, vice-president, Walter R. Clark, U. S. Industrial Chemicals, Inc., and Harold A. Johnson, United States Rubber Company, members of the executive committee, were not present when the picture was taken.

GOULD

Plus-Performance

Plan

... SHOWS YOU HOW

CORRECT CHARGING EXTENDS BATTERY PERFORMANCE!

Right now, the problem of conserving and extending essential battery power is urgent. Timely help is offered you by the GOULD PLUS-PERFORMANCE PLAN which can improve battery performance as much as 50%! Here is a complete system of manuals, articles, specifications, bulletins, record cards and charts which explains and illustrates how to select, charge and handle, maintain and determine the condition of your batteries.

The material comprising the GOULD PLUS-PERFORMANCE PLAN is available to battery users without obligation. A request on your letterhead will bring descriptive literature by return mail.



The Gould "Thirty"
with "Z" Plates—
America's Finest
Industrial Truck Battery



Charging rooms should be planned to make charging and handling convenient and economical.

FOUR SIMPLE CHARGING RULES SAVE POWER

1. Do not overcharge. Use 22.5 amperes per 100 ampere-hours of battery capacity for 80% of charging time. Finish charge at 5 amperes per 100 ampere-hours. Correct charging will not cause gassing or overheating.
2. Give periodic equalizing charges. An extra 4-hour charge at the recommended finish rate at least once a month but not more often than once a week makes sure all cells are up to full charge.
3. Keep idle batteries charged. Batteries not in use should be given a freshening charge once every three months to prevent internal discharge, sulphating and eventual loss of efficiency.
4. Inspect charging equipment regularly. Make sure it is set correctly for the size of batteries to be charged. Inspect voltage relay timers frequently to assure accurate automatic cut-off. If ampere-hour method is used, check ampere-hour meter charts for correct settings.

GOULD

STORAGE BATTERIES

GOULD-NATIONAL BATTERIES, INC., TRENTON 7, NEW JERSEY

Always Use Gould-National Automobile and Truck Batteries

Carolinas-Virginia Association Holds Annual Summer Meeting In Hot Springs, Va.

Information and discussion on Government controls, market conditions and purchasing problems, plus first-hand reports on the recent national convention marked the annual summer meeting of the Carolinas-Virginia Purchasing Agents Association on June 29-30. The meeting was held at The Homestead, Hot Springs, Va.

"All of us are experiencing great difficulty in the performance of our procurement activities," he said. "I can see no good reason for American industry with all of our natural resources and technical know-how experiencing so many difficulties in carrying out operations. Let us become interested and active in our Gov-

pany, national director of the association reported on the convention of the National Association of Purchasing Agents, held earlier in the month in New York City. After reviewing the outstanding events of the meeting, Mr. Berry said:

"The convention was most valuable for its friendly contacts with purchasing executives, and I am impressed more forcibly each year with the willingness of busy purchasing men everywhere to devote the time and effort to share their knowledge and experience and be helpful to one another. We see this spirit here in our own association, but I find it just as real elsewhere—and between purchasing executives more widely separated, and rarely even in touch with each other. That is the strength of the National Association of Purchasing Agents, and of the local groups which comprise it."

The forum panel, closing the Friday afternoon session, was conducted by Jack T. Holt, Erwin Mills, Inc., vice-president of the association. After summaries of conditions in their respective fields by members of the panel there was a lively discussion period.

Participating in the panel were the following: W. E. Prescott, Kendall Mills, on Purchasing Policies; J. C. Liebhart, Drexel Furniture Company, on Furniture and Lumber (in Mr. Liebhart's absence, his paper was read by R. A. McCuiston, Thomasville Chair Company); J. E. Friend, Federal Reserve Bank of Richmond, Va., on Paper and Containers; W. G. Thomas, Duke Power Company, on Utilities; W. H. Cosby, Glamorgan Pipe & Foundry Company, on Fuel; T. A. Hunter, Burlington Mills Corporation, on Mill Supplies; and R. C. Atherholt, Hampton Looms of Virginia, on Textiles.

"Nation's Solvency In Peril"

In the Friday night banquet address, Rep. Burr Harrison, (D-Va.), said that the "solvency of the nation has been placed in dire peril by a bureaucratic conspiracy to minimize the dangerous state of Federal finances."

(Please turn to page 200)



First meeting of the enlarged board of directors of the Carolinas-Virginia association drew (front l. to r.), L. B. Whitehouse, Jr., secretary-treasurer; C. L. Wyrick, president; James M. Berry, national director; W. G. Thomas, founder and past president. In the back row (l. to r.): I. M. Lynn, Charles E. Morgan, P. C. Coggeshall, R. A. McCuiston, and W. G. Terry. Jack T. Holt, vice-president, W. E. Moore, and R. V. Spangler were not present when the picture was taken.

A highlight of the closed business meeting on June 29 was an address by Charles E. Morgan, purchasing agent of Camp Manufacturing Company, on "What Price Purchasing." After briefly reviewing the organizational set-up of his company, and the part played by the purchasing department, Mr. Morgan made a strong plea for preservation of the free enterprise system. Waste, confusion, injustices, and trespasses on the rights of individual citizens have been the result of increasing Government control, he declared.

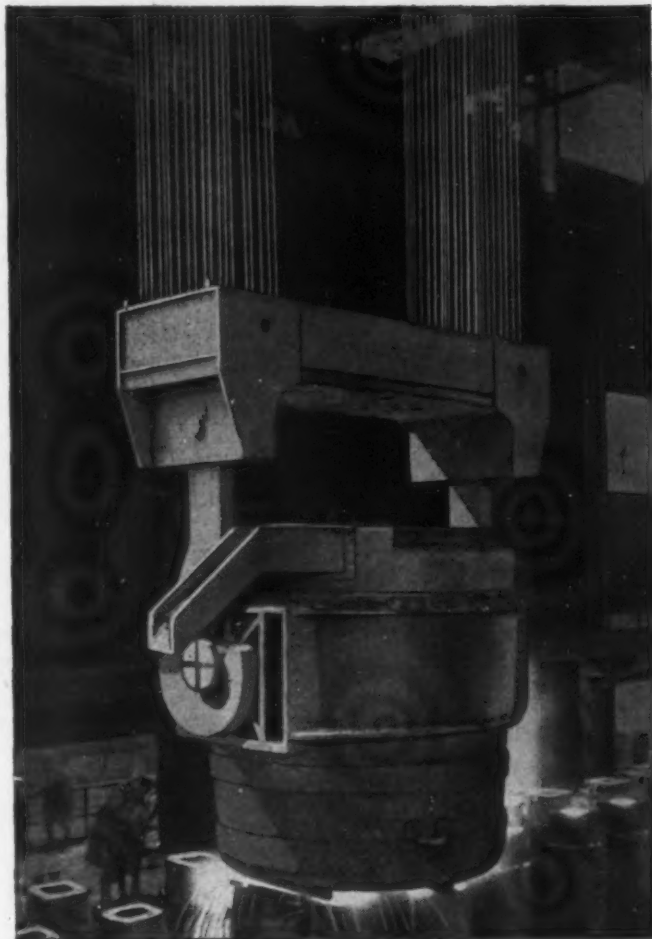
ernment. Let us discuss with our representatives the issues of the day. Let us be thankful that we still have some representatives with deep convictions and a conscientiousness in the discharge of their duties to help keep this a government of the people, by the people, and for the people. We can help ourselves in our own field by helping our nation in its field. We can, we should, and if we do, the topic of this paper can be changed from 'What Price Purchasing' to 'What Ease Purchasing'."

James M. Berry, Vick Chemical Com-



General view of the banquet table at Carolinas-Virginia meeting

WIRE ROPE



ROEBLING ALL-PURPOSE SLINGS
with the Tapered Sleeve Splice
come to you ready for the job.
They cost less than tued
splices... have the full
strength of the rope. Send
for the full story.

**Roebling "Blue Center"
Preformed works
better . . . lasts longer
. . . cuts costs**

"BLUE CENTER" STEEL wire rope is an exclusive Roebling development. Its high resistance to abrasion, shock and fatigue spells long life. In addition, Roebling Preforming gives you a rope that is easy to handle . . . has better spooling qualities . . . reduces vibration and whipping. This combination makes Preformed "Blue Center" Steel Wire Rope a top performer on the job.

Roebling makes a complete line of wire rope . . . there's a construction for every installation. Have your Roebling Field Man help choose the *right* rope for your equipment. Get his advice on the correct use and maintenance of wire rope. It is based on performance records on thousands of installations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

Atlanta, 934 Avon Ave ★ Boston, 51 Sleeper St ★ Chicago, 5525 W. Roosevelt Rd ★ Cincinnati, 3253 Fredonia Ave ★ Cleveland, 701 St. Clair Ave, N.E. ★ Denver, 4801 Jackson St ★ Detroit, 915 Fisher Building ★ Houston, 6216 Navigation Blvd ★ Los Angeles, 216 S. Alameda St ★ New York, 19 Rector St ★ Odessa, Texas, 1920 E. 2nd St ★ Philadelphia, 230 Vine St ★ San Francisco, 1740 17th St ★ Seattle, 900 1st Ave, S. ★ Tulsa, 321 N. Cheyenne St ★ Export Sales Office, Trenton, N. J.





IT'S ALL 'IN THE HEAD' *which is a ® Special!*

The heads of these special bolts have a built-in determination to resist rotation within the molded rubber product encasing them. This extra holding power is all in the head—precision formed on our modern cold-heading machinery. Even though never seen by the customer, this bolt serves him well doing a special job of bonding the strength of steel with the resilience of rubber.

**THIS ®
MESSAGE CUP
BOLT** is typical of
many molded-in-rubber
applications in which the
life of the product depends
upon a special ® Bolt



APPLICATIONS Similar applications of rubber encased bolt heads are found in cushion mounts, automotive bumpers, vacuum cups, motor mountings, shockless suspensions and in track pads.

We have a "Special" answer

FOR EVERY "SPECIAL" PROBLEM



BUFFALO BOLT COMPANY

Division of Buffalo-Eclipse Corporation

NORTH TONAWANDA, NEW YORK

*Sales Offices in Principal Cities. Export Sales Office:
Buffalo International Corp., 50 Church Street, New York City*

Our Specialty is "SOMETHING SPECIAL"

(Continued from page 198)

Mr. Harrison noted that Representative Doughton, chairman of the House Ways and Means Committee, "has warned with all sincerity that we are scraping the bottom of the barrel." "Despite this," he declared, "the heedless conspirators in Washington continue to insist that we cannot reduce the budget—that we cannot permit discontinuance of a single Federal activity, that none of the excursions into socialistic paternalism can be cancelled."

Dr. Henry Bund, member of the Research Institute of America, gave a lucid explanation of the Controlled Materials Plan during the Saturday session.

Another feature of the Saturday program was an educational committee program that included the Socony-Vacuum Oil Company film, "Partners in Purchasing", followed by a panel and floor discussion. The panel, headed by R. V. Spangler, Duke Power Company, chairman of the educational committee, included: James M. Berry, Vick Chemical Company; W. E. Prescott, Kendall Mills; A. J. Dickinson, Virginia-Carolina Chemical Corporation; Paisley Boney, J. P. Stevens & Co., Inc.; P. C. Coggeshall, Sonoco Products Company; and W. G. Haddrell, Mathieson Chemical Corporation.

♦ ♦ ♦

SCHOLARSHIP AWARDS GIVEN AT WASHINGTON MEETING

The last monthly dinner meeting of the current season for the Purchasing Agents Association of Washington was held at the New Washington Hotel, Seattle on June 21.

A feature of the meeting was the award of prizes to University of Washington students by the scholarship award committee. The committee worked closely with the university's School of Business Administration in selecting this year's winners.

An official film on the European phase of World War II, entitled "The True Glory", was shown.

Reports on the recent convention of the National Association of Purchasing Agents were given by H. C. Staley, Arthur Erickson, Paul Hendricks, Gordon Ainslie and Earl C. White.

♦ ♦ ♦

DAYTON ASSOCIATION MEMBERS ACTIVE

E. K. Griest, news editor for the Purchasing Agents Association of Dayton, reports the following activities of association members:

Will Schurene, Dayton Taximeter Corp., has been elected vice-president of the board of trustees of the Greenmount Mutual Housing Corporation. Edwin J. Thum, Specialty Paper Co., has been re-elected secretary of the company's Service Club. Loren Askins of Gebhart Folding Box Co. has been elected first vice-president of the Dayton Club of Printing House Craftsmen.

(Please turn to page 202)



The Tail that Wags the Dog

Keep this thought in mind. On the average painting job, labor represents 80% of your total cost. The paint itself represents only 20%. But the paint is actually the tail that wags the dog. It's what your painter can or cannot do with a paint that cuts down or runs up your painting costs.

That is why we suggest a simple test that shows how Barreled Sunlight really cuts painting costs. Just take a gallon of Barreled Sunlight and a gallon of any other paint and thin each according to directions on the cans. First thing you'll notice is that Barreled Sunlight gives you more paint ready for the brush.

But of even greater importance, see what your maintenance painter can do with each on the wall. You'll see that in any given period of time he can get more yardage — can work much faster and easier . . . with Barreled Sunlight. And what's more, you'll notice that

after drying, Barreled Sunlight hides better...looks brighter, cleaner...even after just one coat.

Project these evident savings . . . savings in the amount of paint you buy and savings in man hours to put it on . . . in terms of a complete job. You'll agree that Barreled Sunlight . . . famous for over 50 years for its quality and proven economy . . . is the paint to use, *always*.

BARRELED SUNLIGHT PAINT COMPANY
18-H Dudley St., Providence, R. I.



Barreled Sunlight *Paints*

In whitest white or clean, clear, pleasing colors,
there's a Barreled Sunlight Paint for every job

IT ALWAYS COSTS MORE NOT TO PAINT!

Pittsburgh's Red Stripe* Brushes...

give
you
top
quality
at
Lower Cost!

* Made by the
manufacturers of
**PITTSBURGH'S famous
Gold Stripe BRUSHES**

TOP QUALITY at a saving... that's the story behind Pittsburgh *Red Stripe* Brushes. They are priced *much* lower than pure bristle... yet meet all tests for long life, smooth painting and easy handling. Hogs' bristle is combined and blended with scientific Neoceta Bristle to assure faster, neater, smoother work every time! Specify *Red Stripe* for better results.

FOR THE ADDRESS of the Pittsburgh dealer nearest you, write: **PITTSBURGH PLATE GLASS CO., Brush Div., Dept. M-3, 3221 Frederick Ave., Baltimore 29, Md.**

PITTSBURGH



Red Stripe BRUSHES

BRUSHES • PAINTS • GLASS • CHEMICALS • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

BRITISH COLUMBIA ASSN. INSTALLS NEW OFFICERS

New officers of the Purchasing Agents Association of British Columbia were installed at a recent meeting. In the absence of national director G. L. Hazard, the ceremonies were directed by J. M. Reid, chairman of the advisory committee.

The new officials are: J. W. Fox, president; J. E. Orrange, first vice-president; D. G. C. Eggo, executive secretary; and J. A. Kellas, treasurer. Past president, W. M. Penny, automatically became national director.

Vancouver Island Activities

New officers recently installed are: G. F. Sharpe, City of Victoria, president; W. B. Dickieson, Greater Victoria School Board, vice-president; and V. R. Porter, secretary-treasurer.

NEW PRESIDENT NAMED BY LOS ANGELES ASSOCIATION



Fred V. Keenan, Vice-president in Charge of Purchases for Keenan Pipe & Supply Company, who was recently elected President of the Purchasing Agents Association of Los Angeles. (Photo courtesy Southwestern Purchasing Agent).

CINCINNATI ASSOCIATION HAS ANNUAL SUMMER STAG

The annual summer stag party of the Cincinnati Association of Purchasing Agents, for members and sponsored guests, was held on Saturday, July 21, at the Melbourne Playground. Among the sports features were the annual ball game between the salesmen and purchasing agents, and the horseshoe pitching contest.

New officers of the Cincinnati association for 1951-52 are: Earl F. Jung, president; Thomas Scahill, vice-president; J. L. Gutermuth, vice-president; Harold R. Kessler, national director; J. Martin Teipel, treasurer; Robert Ratcliffe, secretary. Trustees are Lester M. Heath, Vincent Luebke, and Edward H. Rabe.

(Please turn to page 204)

Here's
proof...



BLU-MOL[®]

**cuts costs on
TOUGHEST
hack sawing jobs**

Tough heavy rails, their surface hardened by the constant hammering of passing trains, are notoriously rough on hack saw blades. In test after test, "Blu-Mol" has proved its ability to outperform other blades for this rugged work.

Time after time, cuts per blade average 50% to 100% higher—costs take a nose dive when "Blu-Mol" goes on the job. As a result more and more leading railroads are adopting "Blu-Mol" as their standard hack saw blade.

"Blu-Mol" is just one of the outstanding performers in the Millers Falls line. For other applications, you can count on tremendous savings with "Jet-Edge,"* the new welded-edge power blade that is *unbreakable* in use. And when it comes to hand blades, there's

**THE WORLD'S BROADEST
AND MOST ADVANCED
LINE OF METALCUTTING SAWS**

super-tough, super-flexible "Tuf-Flex,"* "Blu-Mol" in hand sizes, and "Blu-Flex,"* the remarkable new *flexible* high speed hand blade.

You're on the right track to lower costs when you switch to Millers Falls for all your industrial hack sawing. Write for full details, or let us arrange a convincing demonstration on your own work in your own machines.

MILLERS FALLS COMPANY, GREENFIELD, MASS.



The Mark of Superiority

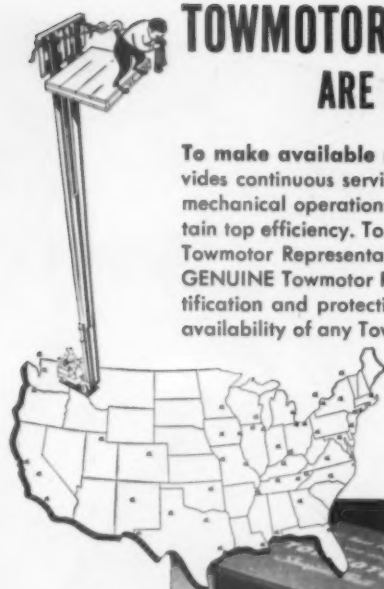
EVERYWHERE YOU LOOK!

TOWMOTOR REPLACEMENT PARTS ARE QUICKLY AVAILABLE

To make available man-power more productive, Towmotor provides continuous service on all handling jobs. However, even normal mechanical operations require occasional replacement parts to maintain top efficiency. To take care of your Towmotor requirements, your Towmotor Representative is equipped to help you with a full line of GENUINE Towmotor Replacement Parts . . . packaged for quick identification and protection against damage. This service assures ready availability of any Towmotor part, and eliminates the trouble of maintaining a parts inventory in your plant.

Available through your Towmotor Representative, Towmotor Preventive Maintenance Service assures extra years of profitable operation and trouble-free service. Write for full details.

TOWMOTOR CORPORATION,
Div. 11, 1226 E. 152nd St.,
Cleveland 10, Ohio.



Genuine Towmotor Replacement Parts are delivered to you in perfect condition in this specially designed package.



TOWMOTOR
THE ONE-MAN-GANG
FORK LIFT TRUCKS and TRACTORS
Receiving • Storage • Processing • Distribution
12 Models—A Towmotor for every job

a favorite THROUGHOUT INDUSTRY

IN EVERY PHASE of industry, Halsey Taylor Cooler Fountains are chalking up an enviable record for performance. Why not keep production at the peak with plenty of cool water throughout the plant. Let Halsey Taylor coolers provide health-safe refreshment for every worker, plus maximum utility and economy of maintenance. Write.

The Halsey W. Taylor Co.
Warren, Ohio

HALSEY TAYLOR

Fountains and Coolers



DALLAS ASSOCIATION SEES MATERIALS HANDLING FILM

A regular semi-monthly meeting of the Purchasing Agents Association of Dallas was held on June 28 at the Melrose Hotel. Featured was a sound color film, "Materials Handling", produced by the General Electric Company. Frank A. Wodrich, vice-president and program chairman, was in charge. J. F. Macpherson, district motor and control specialist, and T. E. Acord, industrial division, General Electric Company, presented the film.

P.A.A.R. CLOSES SEASON WITH "BUY-SELL" PICNIC

The Purchasing Agents Association of Rochester officially ended the 1950-51 season with a reactivation of the popular "Buy-Sell" Picnic at Point Pleasant, on Irondequoit Bay.



Set for a day of fun: (l. to r.) Baird E. Robinson, Joseph E. Gore, editor of the Genesee Valley Buyer, and Leon E. Lewis.



Joe Ernst displays championship form in the horseshoe pitching contest.

About 450 sales and purchasing men attended the affair, which opened with a buffet luncheon. Main attraction of the sports events that followed was a baseball game in which the purchasing agents nosed out the salesmen, 13 to 12. Curt Hart acted as umpire and emerged unscathed.

(Please turn to page 206)

**FEDERAL NOARK
MEANS
BUSINESS!**



Most for your money!

FOR MAXIMUM SPEED of installation...topmost maintenance economy...operational ease, safety and efficiency...the Federal Noark Bus Duct system is today's best buy.

To begin with, the unique Noark adjustable sliding drop hanger permits the most convenient location of supporting rods and provides the quickest method for installing bus duct that was ever devised. And from then on you get all the advantages brought by Federal Noark Bus Duct special features:

Interlocking Four-Channel Steel Housing...welded and screwed together to assure greatest strength. Even the longest runs are bound to be straight and true.

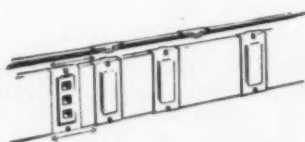
Extra Rugged Interior Construction...with the bus bars rigidly held by porcelain insulated receptacles every twelve inches.

The bus bars are designed to withstand heavy fault currents. **Positive Contact**...bus bars are silvered over their entire length. Plug-in stabs reinforced with heavy steel springs.

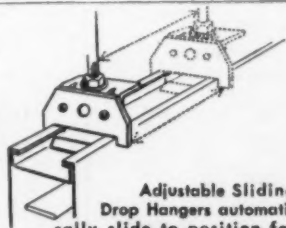
Insulated Plug-In Openings...no bus is exposed...operator is safe when changing plug-in device. For extra protection, new hook-on bars support plug-in device during installation.

Unsurpassed Heat Dissipation...staggering of insulators on alternate sides of duct provides continuous air passage and coolest operation.

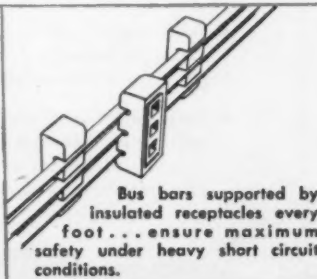
Federal Noark Bus Duct is factory-assembled in 10-foot sections, and completely flexible for future needs. For the full story, write Federal Electric Products Company, 50 Paris Street, Newark 5, New Jersey.



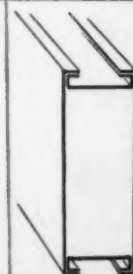
Sliding, self-locking cover plates, protecting insulated plug-in openings, safeguard electricians.



Adjustable Sliding Drop Hangers automatically slide to position for exact alignment...slash installation time.



Bus bars supported by insulated receptacles every foot...ensure maximum safety under heavy short circuit conditions.



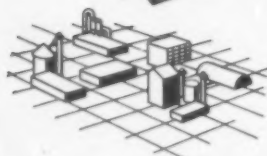
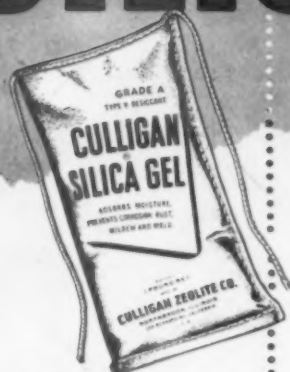
Interlocking four-channel construction assures greatest strength...even long runs are straight as a plumb line.

FEDERAL NOARK

Complete line of Federal Electric Products includes Motor Controls, Safety Switches, Service Equipment, Circuit Breakers, Panelboards, Switchboards, Control Centers, Bus Duct ★ Sales offices in principal cities.



CULLIGAN[®] SILICA GEL



experience!

Culligan... the world's largest distributor of desiccants at the close of World War II.



leadership!

Research and new developments are a continuing activity at our headquarters in Northbrook, Illinois



service!

Culligan's nation-wide field staff of expert packaging engineers is available for counsel.

**CULLIGAN
DESICCANTS**

Copyright 1951 C. Z. Co.

CULLIGAN ZEOLITE COMPANY

Home Office: NORTHBROOK, ILLINOIS

the ideal desiccant

FOR METHOD II DEHYDRATED PACKAGING...

When moisture is murder to metal parts and equipment, there's no need to dig and delve for the answers to proper packaging! Culligan's field-staff of expert packaging engineers are available to contractors coast-to-coast for competent counsel and service. Millions of bags of Culligan Silica Gel have been produced for a multitude of Method II packaging applications. Over 2,000 leading organizations have consistently specified this grade A desiccant.

- Culligan Silica Gel meets current military specifications. Prices are competitive.
- Available in all standard bag sizes, in bulk, or custom packaged to fit your immediate needs.
- Two convenient shipping points: Northbrook, Illinois (suburb of Chicago); San Bernardino, California

write for price list
and specification sheet

(Continued from page 204)

After a buffet dinner, door prize drawings were held. Jim Cooney, national director, who was holding the box from which winning tickets were being drawn, had the pleasure of seeing his own ticket drawn.

Joseph L. Ernst headed the committee, made up of members of both professions.

Directors will continue to meet through the summer to conduct the affairs of the association and develop meeting programs for the coming season.

♦ ♦ ♦

SILVERNAIL HEADS BUFFALO ASSOCIATION

Joseph K. Silvernail, Socony Vacuum Oil Company, Inc., Atlas Works, has been elected president of the Purchasing Agents Association of Buffalo. He succeeds Elson E. Holrod.

Other new officers are Edward J. Kidd, first vice-president; Horace W. Hooker, Jr., second vice-president; Leon J. Trum, secretary, and Joseph W. Schwalbach, treasurer. Directors are Edward G. Dobe, Frank E. Whyte, Mr. Trum and Mr. Schwalbach.

♦ ♦ ♦

NEW OFFICERS ELECTED BY TRI-STATE ASSOCIATION

New officers for 1951-52 were elected at the June 19 meeting of the Tri-State Purchasing Agents Association. They are:

E. R. Roush, Acme Limestone Co., Ft. Springs, W. Va., president; G. M. Thornburg, National Mattress Co., Huntington, W. Va., first vice-president; C. G. Roll, Armco Steel Corp., Ashland, Ky., second vice-president; John M. Waller, American Cyanamid Company, Calco Chemical Division, Willow Island, W. Va., national director; Arthur A. Meyer, 329 Eighth Ave., Huntington, W. Va., secretary-treasurer. Two-year directors are: T. W. Lawton, Enslow Machinery Co., Huntington, W. Va.; W. Carl Elswick, Ironton Fire Brick Company, Ironton, O.; J. W. Sturgeon, Capital City Supply Co., Charleston, W. Va. Hold-over directors are: Henry L. Ruff, Parkersburg Rig & Reel Co., Parkersburg, W. Va.; T. H. Evans, The McBee Company, Athens, O.; and director ex-officio is J. H. West, McJunkin Supply Co., Charleston, W. Va.

♦ ♦ ♦

CENTRAL IOWA ASSN. ELECTS NEW OFFICERS

New officers of the Purchasing Agents Association of Central Iowa for 1951-52, elected at a recent meeting, are:

J. M. Casey, Wood Brothers, Des Moines, president; D. R. Foster, Midwest Metal Stamping Company, Kellogg, first vice-president; W. M. Hollingsworth, The Maytag Company, Newton, second vice-president; A. W. Baldock, Globe Machinery and Supply, Des Moines, national director; W. L. Howlett, Firestone Tire & Rubber Company, Des Moines, secretary-treasurer.

(Please turn to page 210)



Summer is the time to plan

RADIANT HEATING AND SNOW MELTING INSTALLATIONS

WITH **SPANG CW** STEEL PIPE

Now is the time to plan to install Radiant Heating and Snow Melting systems. Radiant Heating is the trouble-free, closed wet-heating system to use in modern offices, factories, and homes; Spang CW is the trouble-free Steel Pipe to specify. Your men will find it easy to bend, easy to cut, thread and weld.

Up-to-date airports, hotels, clubs, office buildings and homes banish slippery and snow-caked areas for

good with heated Snow Melting installations. Make these Snow Melting installations with Spang CW Steel Pipe for ease of fabrication, and assured years of maintenance-free service.

Spang CW is used by industry for all types of services. Leading distributors carry it, plus the fittings you need. For uniform quality and dependability in piping systems, ask for Spang CW Steel Pipe by name.

SPANG-CHALFANT

Division of The National Supply Company

GENERAL SALES OFFICE: Grant Bldg., Pittsburgh 30, Pa.

District Sales Offices: Atlanta; Boston; Detroit; Houston; Los Angeles;
New York; Philadelphia; Pittsburgh; St. Louis





FACTS about PROPYLENE GLYCOL U.S.P.

PROPYLENE GLYCOL, U.S.P., made by The Dow Chemical Company, is a product of consistent, high purity prepared specifically for tobacco, food, drug and cosmetic use. The fact that it meets the high standards required for inclusion in the United States Pharmacopoeia indicates its applicability to pharmaceutical preparations, as well as to foods and cosmetics.

To assist you in evaluating the functions of propylene glycol, U.S.P. in your product, Dow presents the following information on a number of practical uses for this highly efficient chemical. Despite current shortages, Dow continues to be interested in helping you solve your production and experimental problems.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

ADVANTAGES OF PROPYLENE GLYCOL, U.S.P.

1. Odorless
2. Relatively tasteless
3. Low volatility
4. Acceptable in foods
5. Emulsifying aid
6. Wetting agent
7. Humectant
8. Preservative
9. Plasticizer
10. Excellent solvent

PROPERTIES and General Uses

An outstanding characteristic of propylene glycol, U.S.P. is its solubility in all proportions in water. Moreover, it will dissolve and put into water solution many organic chemicals. Thus, it is widely used in the preparation of foods, flavors, cosmetics and pharmaceuticals.

Propylene glycol is also an extremely effective softening and moistening agent, as indicated by the hygroscopic quality of water solutions containing large amounts of the chemical, plus its characteristic plasticizing action. As a moisture control agent, it is used in tobacco for cigarettes. Propylene glycol also inhibits mold growth. It is used to extend the shelf life of certain foods, as well as to prevent mold contamination of idle food machinery.

DOW PROPYLENE GLYCOL, U.S.P.

Conforms to or exceeds the specifications
established by the U.S. Pharmacopoeia XIV (1950)

INTERPRETATION OF U.S. PHARMACOPOEIA SPECIFICATION

Specific Gravity @ 25/25°C.....	1.035-1.037
Distillation Range (Method 2 U.S.P. XIV) I.B.P.-D.P.....	185-195°C.
Identification.....	Passes Tests
Ash.....	Not more than 0.007%
Acidity (As Acetic Acid).....	Not more than 0.0115%
Chloride.....	Not more than 0.07%
Sulfate.....	No Turbidity*
Heavy Metals.....	Not more than 5 p.p.m.
Arsenic (as As ₂ O ₃).....	Not more than 2 p.p.m.

*Method: Dilute 5 cc. of propylene glycol with 15 cc. of distilled water and add 5 drops of Hydrochloric Acid and 5 drops of Barium Chloride T.S.

This is No. 3 of a series of Dow advertisements you may wish to keep on file for reference and information. Write Dow for reprints.

Propylene Glycol in FOODS



Because of its solvent, preservative, hygroscopic and wetting properties, and especially because of its economy in use, propylene glycol has found wide acceptance in the food field. Apparently, the only class of flavoring raw materials not sufficiently soluble in propylene glycol for the practical preparation of flavor solutions is the citrus oils. However, by using edible wetting agents, it is possible to prepare a 5% orange oil colloidal dispersion in propylene glycol which, to all appearances, will be a solution.

In addition to the preparation of flavor solutions, propylene glycol, U.S.P. is being used as a solvent for the extraction of vanilla flavor from vanilla beans and also in the preparation of a coffee flavor from ground roasted coffee. As a corollary to the flavor use of propylene glycol, many manufacturers have found that it makes an excellent food color solvent and that its use necessitates only very slight alterations in basic food color formulas.

Another interesting and relatively undeveloped use of propylene glycol is in increasing the effectiveness of shortening in the production of baked goods. Apparently the emulsifying or wetting action of the chemical aids in the dispersion of the shortening throughout the batch, thus permitting the use of reduced amounts of shortening. Much investigation remains to be done on this phase of propylene glycol use, but it is apparent that a definite benefit can be obtained.

Being a hygroscopic material, propylene glycol in sufficient concentrations tends to attract moisture from the air and, as a result, baked goods, to which a very small proportion of propylene glycol has been added, have a considerably enhanced shelf life.

This preservative action, so apparent in the use of propylene glycol in baked goods, points logically to its use in other food products which require a preservative. Actual laboratory tests have shown that a 15% concentration of propylene glycol will inhibit the growth of mold on nutrient media, and it is quite possible that a smaller concentration would retard the growth of spoilage organisms under less ideal growing conditions. Although the subject has not been fully explored, there is reason to believe that many solid foods can be placed on the market in better condition through the use of small quantities of propylene glycol.

PHARMACEUTICALS



The same qualities which make Dow propylene glycol, U.S.P. useful in food and flavoring preparations can be of great assistance in preparing pharmaceutical formulas. Here it acts as a carrier, solvent, emollient, humectant, lubricant and preservative.

The manufacturer of pharmaceutical preparations, whether for internal consumption, topical application or injection, must first solve the problem of finding a solvent which, in addition to being a good carrier, forms an acceptable medicinal. Propylene glycol, U.S.P. has been used in many approved pharmaceutical preparations and, in many cases, its preservative action is of considerable importance.

The versatility of the solvent properties of propylene glycol, U.S.P. applies to many organic chemicals used in the field of chemotherapy. Its use therefore should be considered in many estrogens, antiseptics, salves, elixirs, ointments and other types of pharmaceutical preparations.



COSMETICS

Dow propylene glycol, U.S.P. is used as a carrier, emollient, humectant, and preservative in many types of cosmetics. A great number of manufacturers of creams, lotions and similar products have discovered the advantages of propylene glycol's soothing and softening effect without residual stickiness. Propylene glycol can often be used in place of a more expensive ingredient and often will yield a superior product. In many cases, the addition of propylene glycol requires only a very slight change in the old formula to provide a high quality cosmetic.

Propylene glycol has been found effective in the preparation of lotions (whether non-alcoholic, mildly alcoholic or strongly alcoholic), cold creams and "all purpose" creams, hormone creams, vanishing creams, practically every type of facial make-up, permanent waving solutions and wave set solutions, shaving creams, soaps, shampoos and sun tan preparations.

This material is presented for what assistance it may give and is merely to be taken as indicative of the characteristics of DOW propylene glycol, U.S.P. and is not to be construed as specific recommendations.

WRITE DOW FOR INFORMATION AND TECHNICAL ASSISTANCE.

The Dow Chemical Company, Dept. OC-15,
Midland, Michigan

- ☐ Please send _____ reprints of this advertisement.
☐ Please send me additional literature about propylene glycol, U.S.P.

Name _____ Title _____

Company _____

Address _____

City _____ State _____

DOW
CHEMICALS
INDISPENSABLE TO INDUSTRY
AND AGRICULTURE

L&I quality ground REAMERS

FOR EVERY PURPOSE

LONGER LIFE

FINER FINISH

EXTREME ACCURACY

ECONOMY

PERFORMANCE

RELIABILITY

Complete range of sizes and types. In addition, Fractional sizes 1/16" thru 1/2" by 64ths, Wire Gage sizes #1 thru #60 and Letter sizes A thru Z are STANDARD with L&I. See your L&I Distributor.



The Reamer Specialists
LAVALLEE & IDE, INC.
CHICOPEE, MASS.

(Continued from page 206)

The association held its Ladies Night meeting at the Des Moines Golf and Country Club on June 12. V. S. Peterson, public relations department, E. I. duPont de Nemours & Company, Inc., discussed "Progress in Better Living."

CENTRAL MICHIGAN ASSN. QUERIES MEMBERS ON PROGRAMS

In an attempt to give the program chairman and officers for the coming year something on which to work regarding types of meetings, the Central Michigan Association of Purchasing Agents has queried members on what programs they prefer.

The choices outlined, which give wide scope to the members' interests and wishes, are reprinted here in the belief they may furnish ideas to other associations:

- () I have enjoyed the type of programs we have had this year. Let's keep about the same pattern for next year.
- () I am not satisfied with the programs we have had. I would rather see:
 - () More of the educational type of program.
 - () The programs have been too heavy, let's have more humorous speakers and some entertainment.
 - () Let's have entertainment at each meeting along with a serious speaker.
 - () Would like to see more outside speakers even if we have to pay to have them.
 - () I work hard all day and want to relax at night — let's have more programs for fun.
 - () I like to listen to speakers from our own organization on subjects that they are experts on.
 - () I would be interested in attending separate meetings, one for educational purposes and one for entertainment.
 - () on the same night
 - () on different nights
 - () I like short commodity talks at each meeting from our own members.
 - () More plant visitations, please.

NEW ALLOTMENT NUMBERS AND SYMBOLS UNDER CMP

All Government Claimant Agencies, including NPA have been instructed to use new allotment numbers, symbols and DO symbols assigned by the Defense Production Administration in authorizing production and construction schedules, and in making allotments of steel, copper and aluminum under the Controlled Materials Plan as well as for authorization under other NPA regulations and orders. The list of new allotment and DO symbols, together with the claimant agency program to which they apply is available from the National Production Authority, U. S. Department of Commerce, Washington 25, D. C.

(Please turn to page 212)

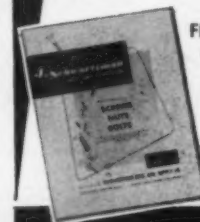
ORDERS

filled immediately
on

Machine, sheet
metal and cap
screws, carriage
and machine
bolts



Every purchasing agent knows the importance of dependable sources for parts. Slow shipments cost time and money. Schwartzman concentrates on rapid, accurate fulfillment of all orders anywhere in the United States.

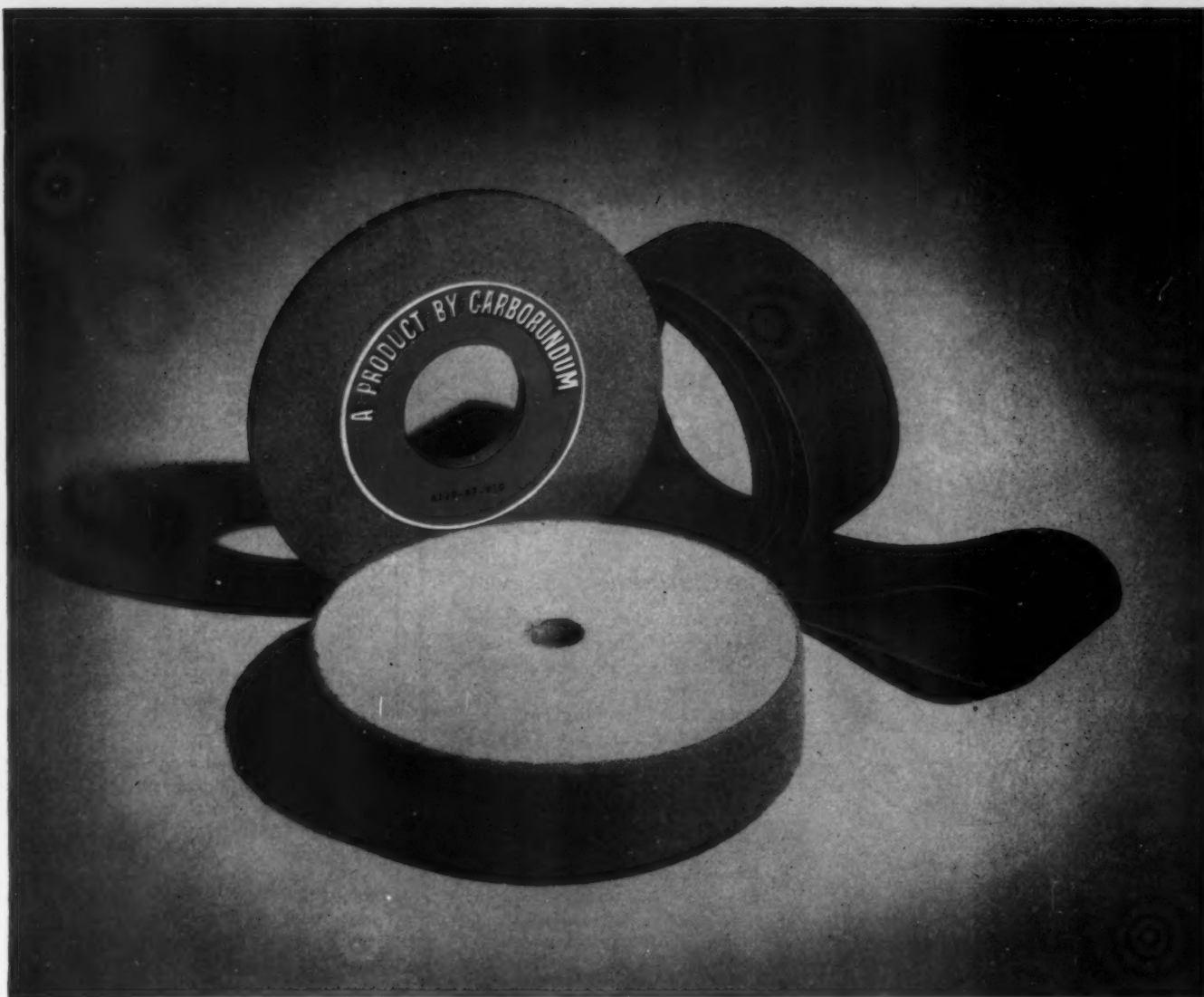


FREE catalog will be sent on standard items to make ordering easy. Consultation service available on "special" items.

A few choice territories still open for distributors.

J. Schwartzman
MFG. AND SUPPLY CO.

7040 Laurel Canyon Blvd.
North Hollywood, California



You can't miss...

Not when you pick a product by CARBORUNDUM. A complete line of all abrasive products is your assurance of selective product application. You match the best method with the right product from the complete standard line by CARBORUNDUM.

Thus, the recommendation of an experienced CARBORUNDUM salesman or distributor is not merely helpful...it's impartial.

These men have no reason to offer anything but the best method and product for your job...they sell the only complete line of products identified by the best known name in abrasives.

This experience in all abrasive products and methods is an excellent proving ground for new products and methods. Ask your CARBORUNDUM representative about them. You can't miss.

Only **CARBORUNDUM**
TRADE MARK

makes ALL Abrasive Products...to give you the proper ONE

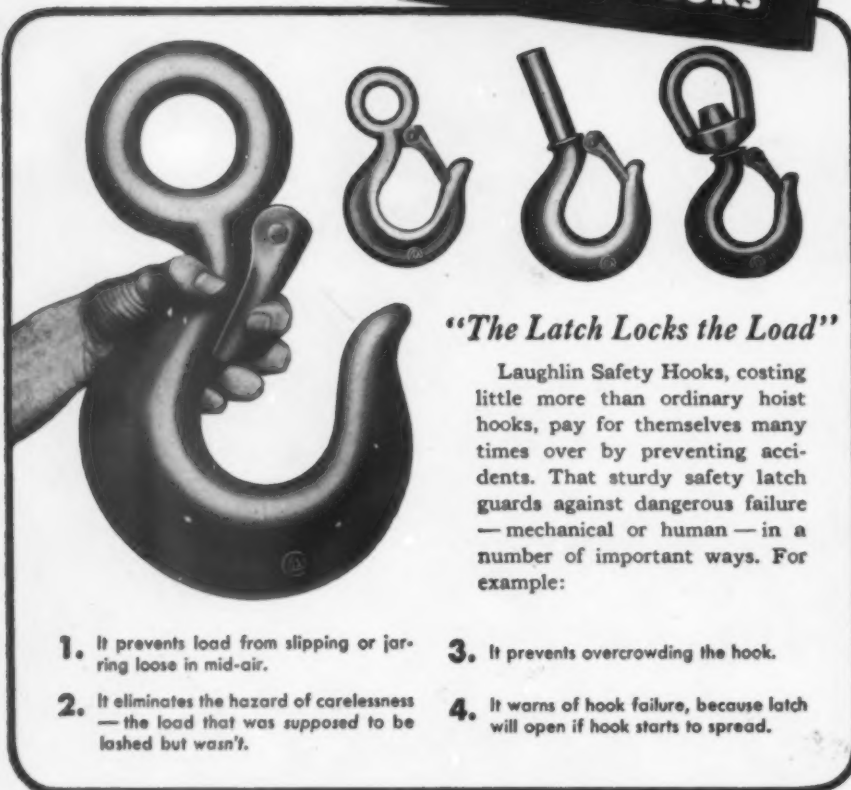
"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company, Niagara Falls, N.Y.

80-28

SAFETY THAT'S BEYOND PRICE!

Yours for little extra cost with

LAUGHLIN
Safety Hooks



"The Latch Locks the Load"

Laughlin Safety Hooks, costing little more than ordinary hoist hooks, pay for themselves many times over by preventing accidents. That sturdy safety latch guards against dangerous failure—mechanical or human—in a number of important ways. For example:

1. It prevents load from slipping or jarring loose in mid-air.
2. It eliminates the hazard of carelessness—the load that was supposed to be lashed but wasn't.
3. It prevents overcrowding the hook.
4. It warns of hook failure, because latch will open if hook starts to spread.

Rig Safety into YOUR Hoists

by changing over to Laughlin Safety Hooks. Made of drop-forged, heat-treated steel, they have pressed steel latches in the smaller sizes, cast bronze latches in the larger sizes, all with stainless steel springs. Available in various types for 750 lb to 15 ton safe working loads at your mine, mill or oil field supply house.

Free! Catalog-Data Book tells you how to select the *right* wire rope and chain fitting for every job. Complete specifications—helpful tables. Use the coupon below.



SEND IN TODAY
...no cost or obligation

THE THOMAS LAUGHLIN COMPANY
48 Fore Street, Portland 6, Maine
Please send Catalog-Data Book #150 to:

Name..... Position.....
Company.....
Street.....
City..... Zone..... State.....

LAUGHLIN



THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



NOW ENTERING SECOND PHASE OF MOBILIZATION PROGRAM

"The United States is entering upon the second phase of the mobilization program—one in which shortages of critical materials will be increasingly felt," declared Manly Fleischmann, Administrator, National Production Authority, in recent address at the Commonwealth Club, San Francisco.

"The question is often asked: Why, if the military program is comparatively small—10 percent of the national product now, 15 percent by the end of this year, and possibly 20 percent next year—do we need such elaborate regulation over the flow of materials?

"The answer is that we are dealing, not in dollars and in abstract statistical terms, but in chunks of copper, ingots of aluminum, the many kinds of steel. The shortages are selective. While the military program, over all, will take no more than 15 percent of certain types of steel, it will certainly take 50 percent, or more of other types, such as structural steel T and I beams and certain alloys. It will take almost all the stainless steel, and, as a consequence, almost all the alloying elements such as cobalt, columbium, and nearly all the nickel.

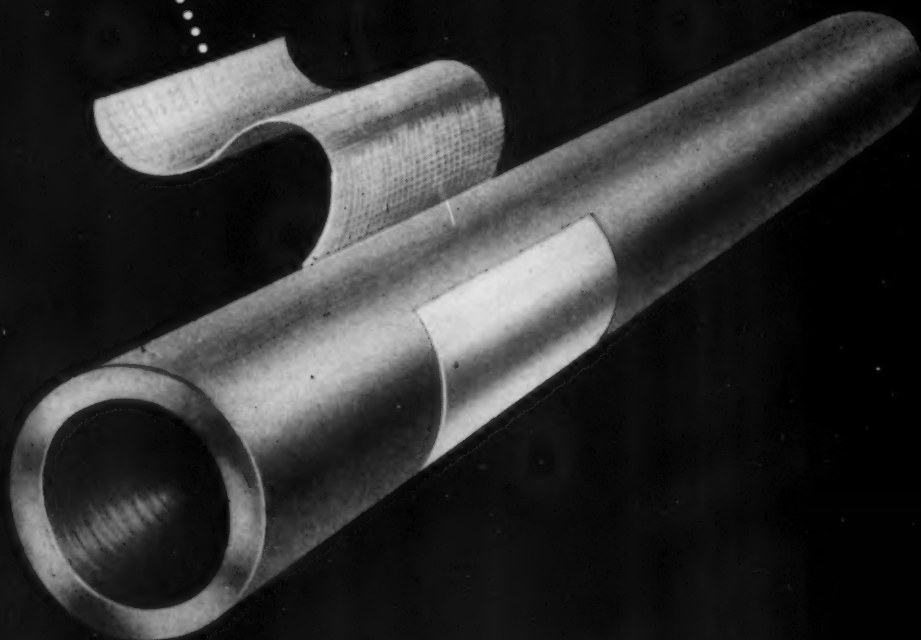
"Beginning with the third quarter of this year and continuing certainly through all of next year, the military take is going to peak up at a rate which should increase substantially each month. This, of course, has been expected all along, and what is happening is something that many persons knew would happen. Yet, during the period when shortages were not apparent—there were goods of all kinds in the stores of the country—and in some instances the market was even glutted with civilian products, it is hard for people to believe that in the near future the impact will be felt by the consumer.

"One regulation which the Government can neither repeal nor amend is the law of mathematics. The supplies of steel, copper, and aluminum will go only so far. They can't be stretched to any great extent. When the demand exceeds supply, something has to give.

"In a metal-using economy like ours, various shortages link together to produce a situation which, lacking controls, could become serious. For example, to create more steel capacity we have to use steel to build mills, plants, machinery. We must increase the supply of coking coal and the facilities to increase the amount of coke produced. We must also—as we have been doing—seek out the heavy industrial scrap with which more steel is to be made. Another example is the program for virtually doubling the aluminum capacity of the country, from 750 thousand tons last June to 1.5 million tons by the end of 1953. In order to produce this great increase we need more bauxite to produce more alumina, and more electric power to reduce the alumina to aluminum. The creation of new power capacity requires copper for

(Please turn to page 214)

this metal heals its hurts
before they happen



**when regular lubrication fails, "Tiger" Bronze
lubricates itself to prevent damage**

One of our Sales Engineers recently reported . . . "The inexperienced maintenance man bolted down the bearing housing so tightly that the film of lubrication between shaft and bearing squeezed out. The equipment started up.

"Five long minutes of dry, metal-to-metal operation passed before the smoking bearing signalled shut-down. Examination showed the expensive steel shaft was unharmed because the lead content of the 'Tiger' Bronze bearing had sweated out and plated the running surface, cushioning the shaft and preventing seizure."

"Tiger" Bronze is hard enough to carry heavy bearing loads without distortion. It is soft enough to embed foreign particles that would otherwise score the shaft. It will stand severe shocks and pounding, both constant and intermittent. "Tiger" Bronze is easy to machine at speeds as high as 3000 f.p.m., and requires no lubricants or coolants when machining.

"Tiger" Bronze is available in cored and solid bars, as cast or machined, in popular sizes for *direct* shipment at substantial savings. Write Dept. P.



**AMERICAN
Brake Shoe
COMPANY**

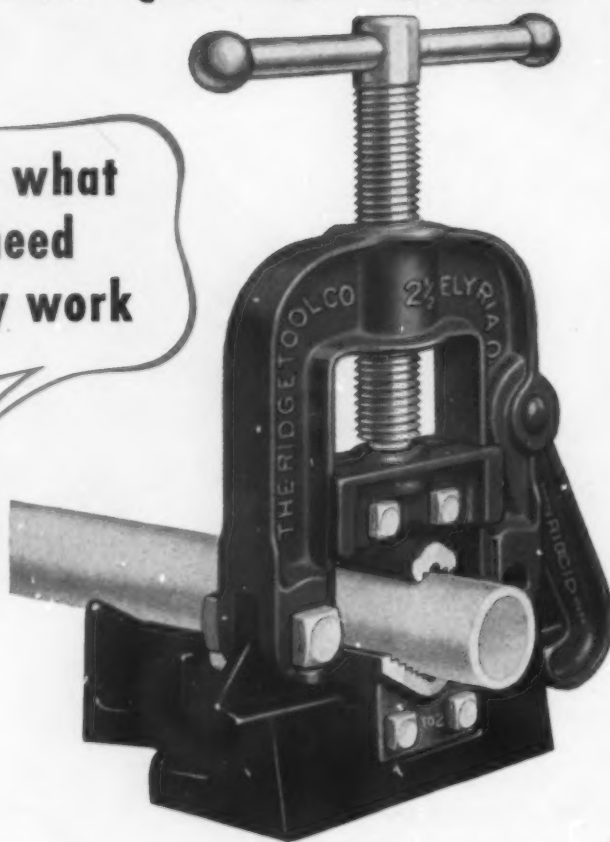
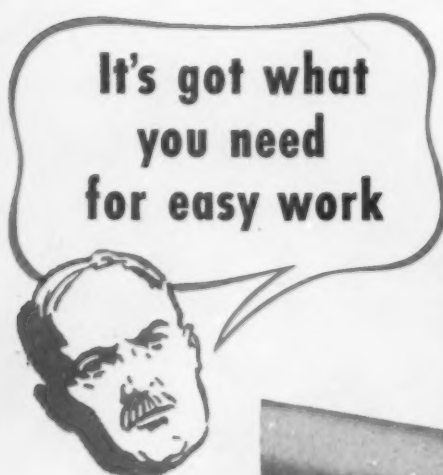
230 PARK AVE., NEW YORK 17, N. Y.

Copyright 1960, American Brake Shoe Company

10 Divisions of American Brake Shoe Co. produce wear-resisting parts in 58 American and Canadian plants.

AMERICAN BRAKEBLOK DIVISION • AMERICAN FORGE DIVISION • AMERICAN MANGANESE STEEL DIVISION
BRAKE SHOE AND CASTINGS DIVISION • ELECTRO-ALLOYS DIVISION • ENGINEERED CASTINGS DIVISION
KELLOGG DIVISION • NATIONAL BEARING DIVISION • RAMAPO AJAX DIVISION • SOUTHERN WHEEL DIVISION

The Handy Durable **RIDGID** Bench Yoke Vise



● You save time and effort with this more-for-your-money **RIDGID** Bench Vise. Right where you need 'em are its integral pipe rest and benders that won't flatten pipe—and heat-treated tool-steel LonGrip jaws mean you don't have to be so fussy with polished pipe. Special malleable frame, extra durable. 8 sizes to 6" pipe, bench, post, stand and Tristand models, yoke and chain. Order from your Supply House.

RIDGID

★ **Work-Saver Pipe Tools** ★

THE RIDGE TOOL CO. • ELYRIA, OHIO

(Continued from page 212)

the generators, rubber for the insulation, the ingredients for high-temperature varnishes, the steel for the buss structures, and all the myriad components of modern electrical equipment.

"It is this type of endless industrial chain that makes it absolutely necessary for us to have controls at this time, not only so that military and defense production can be superimposed upon the civilian economy—but so that it can be done in a way with minimum displacement of labor, minimum financial hardship to business, minimum shortages of goods for consumers."

1 1 1

SELF-CERTIFICATION TO BUY MATERIALS FOR RESEARCH

Self-certification to purchase materials is provided by NPA for laboratories engaged in technical or scientific research. Order M-71 which permits such self-certification, also limits the quantity of materials so obtainable. For a larger quota a special application must be made on Form NPAF-109.

1 1 1

METAL WORKING MACHINERY DIRECTORY ISSUED BY GOVERNMENT PRINTING OFFICE

A second revision of "The Directory of Metalworking Machinery, available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., at \$3.50 per copy, reflects changes in corporate structure and plant ownership and includes a master reference index of approximately 800 machine tool builders and a listing of about 60,000 metalworking machines with description.

1 1 1

GAS EQUIPMENT MAKERS ADOPT STANDARD CODE

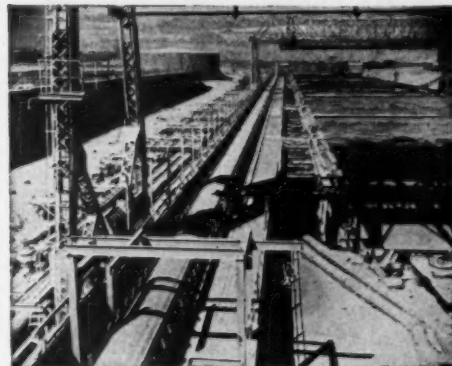
Designers and builders of more than 25,000 different types of gas equipment for industrial use, recently announced voluntary adoption of a "code of ethics" governing the standards of performance and safety of such equipment. According to D. A. Campbell, chairman of the group, a division of the Gas Appliance Manufacturers Assn., since industrial gas equipment is designed to the individual customer's order only, there has been no system of approving its products, as in other gas appliance fields. "In the absence of official standards," he said, "each manufacturer pledging adherence to the self-imposed code indicates that he is conscious of his obligation to the public and to the industries he serves. Among other things, the codes provides that manufacturers of industrial gas equipment "shall make only such representations as are consistent with integrity and the highest standards of our industry, and shall scrupulously avoid false or misleading statements with respect to the grade, quality, design, construction, or performance of our products."

(Please turn to page 216)

U. S. Rubber conveyor belt establishes a world's record



This record-breaking "U.S." belt carries a maximum of 5,000 tons of copper ore per hour, travels 600 f.p.m. through a traveling tripper. Total belt length is 2990 feet, width is 60", 42-ounce duck construction.



This U. S. Rubber conveyor belt in operation at a Chilean copper mine has carried over 100,000,000 tons of abrasive copper ore . . . a world's record . . . at the amazingly low cost of less than 45¢ per 1,000 tons! The belt has been in continuous service for over 12 years. The operators say there are still many more years of service in the belt, despite this record-breaking performance.

Such success as this results from 3-way engineering teamwork; mine operators, designers of conveyor equipment, and the United States Rubber Company belt engineers. For your haulage problem, large or small, call in a "U. S." engineer. Write to address below.

Twelve years' exposure to blistering tropical sun, one of rubber's worst enemies, has had little or no effect on the belt. It is located at the plant of the Chile Exploration Co., an Anaconda Copper subsidiary.

PRODUCT OF



UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

AUGUST, 1951

Please mention **PURCHASING** Magazine when writing to advertisers.

215

Partial List of
WHAT WE MAKE

TO HELP YOU DO A FINE JOB IN MATERIAL HANDLING, PROCESSING AND REDUCING OPERATIONS

We build a complete line but can show only a few units here. Look them over... likely you need one or more now. Whether complete systems, individual units or Replacement Parts... we will be glad to help you speed production—cut costs. May we hear from you?



Troughing and Return Idlers for belts from 14" to 60".



Scraper Flight Conveyors—also steel or wood Apron types.



Vertical and Inclined Bucket Elevators—spaced or continuous buckets.



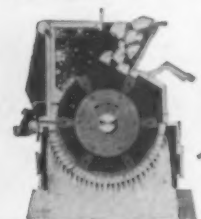
Spiral Conveyors, Flights, Troughs, End Bearings, etc.



A wide range of electric vibrating Feeders, Conveyors, Packers, Screens, Check Valves, etc.



Chains, Sprockets and Attachments.



Crushers, Pulverizers, Shredders and Grinders.



Electric Vibrating Barrel Packers and Packing Tables with decks to provide conveying action.

THE JEFFREY EST. 1877 MANUFACTURING CO.

784 N. Fourth St., Columbus 16, Ohio

Baltimore 2	Cleveland 15	New York 7
Beckley, W. Va.	Denver 2	Philadelphia 3
Birmingham 3	Detroit 13	Pittsburgh 22
Boston 16	Harlan, Ky.	St. Louis 1
Buffalo 2	Houston 2	Salt Lake City 1
Chicago 1	Jacksonville 2	Scranton 3
Cincinnati 2	Milwaukee 2	

Jeffrey Mfg. Co. Ltd., Montreal, Canada
 Jeffrey-Gallon (Pty.) Ltd., Johannesburg, S.A.
 The Ohio Malleable Iron Co., Columbus, Ohio
 British Jeffrey-Diamond Ltd., Wakefield, Eng.
 The Gallon Iron Works & Mfg. Co., Gallon, Ohio
 The Kilbourne & Jacobs Mfg. Co., Columbus, O.

RECENTLY ADOPTED J.I.C. PNEUMATIC STANDARDS OFFERED FREE

The "J.I.C. Pneumatic Standards for Industrial Equipment", recently adopted by the Joint Industry Conference (J.I.C.) on Pneumatics as the desirable quality requirements to be specified by users of pneumatic machinery and equipment, are offered free to engineers, designers, pneumatic equipment users and manufacturers by Miller Motor Company, Chicago manufacturer of pneumatic and hydraulic cylinders and related products.

The "Standards" are reproduced in full—with sample circuit, glossary of terms, two pages of standard symbols, and an interesting comparison showing how Miller Air Cylinders meet the "Standards" point for point—all neatly compiled in an attractive hole-punched 12-page booklet that fits standard ring binders and that conveniently folds to fit the pocket. Free copies of these Pneumatic Standards are available from Miller Motor Company, 4027 N. Kedzie Avenue, Chicago 18, Illinois.

UP-TO-THE MINUTE INFORMATION ON BITUMINOUS COAL

Two pamphlets just released by the Bituminous Coal Institute, Southern Building, Washington, D. C., present up-to-the-minute information on bituminous coal, written in popular style. For every ton of coal mined up to the present time in the history of this nation, more than 80 tons remain in the ground, the Institute points out in a folder "Map of Coal Areas in the United States." It also shows that 31 states have mineable coal deposits with most of the bituminous resources lying in the central states and Appalachian regions.

A companion piece of educational literature is "The Bituminous Coal Story" a 16-page booklet printed in color. It traces the formation of coal, explains the difference in the different kinds of solid fuels, and describes America's highly-mechanized bituminous mining system that accounts for production in excess of one-half billion tons annually.

INDUSTRIAL PLANT RESERVE PROGRAM

More than 80% of the plants retained under Government control after World War II are now being used or readied for use in the rearmament program. The Munitions Board reports that as of May 1, there were 421 plants in the reserve. Of this total, 275 were producing the types of products they are intended to make in wartime, and 62 were being reconditioned to get into production for current program; while 25 others were in use but were not now making planned wartime products. Fifty-nine plants, including 17 shipbuilding and 19 ammunition loading facilities, were idle. The reserves also include 21 non-manufacturing facilities, all of which are active.

(Please turn to page 218)

TO SAVE MONEY?

DARNELL CASTERS & WHEELS

Reduce floor and equipment wear to a minimum—increase employee efficiency with the casters that "always swivel and roll."

A SAVING AT EVERY TURN



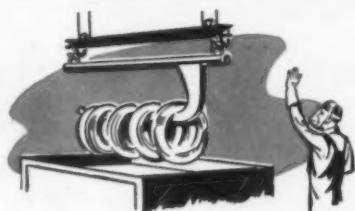
DARNELL CORP. LTD.

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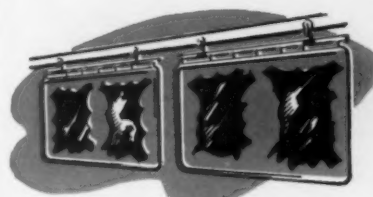
What Part Does **MURIATIC ACID** Play in Your Production Program ?



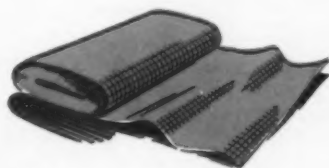
For Metal Pickling



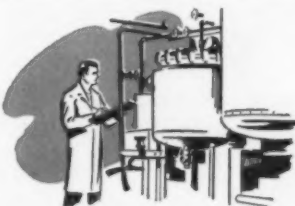
For Oil Well Acidizing



For Chrome Tanning of Leather



In the Textile Industry



In the Manufacture of Pharmaceuticals



In the Manufacture of Vinyl Chloride

Of all industrial acids, Muriatic (Hydrochloric) Acid is second only to Sulfuric in versatility and volume used. Today, the demand for it has spiraled to new heights to meet accelerated production requirements in many of our most essential industries.

As a primary producer for over 50 years, General Chemical offers this important basic chemical in all grades and strengths from Standard to C. P. (Reagent) quality . . . from tank car to small bottle lots. The Standard grade is produced in 18°, 20° and 22° Baume strengths; Diamond and Crystal grades—20° Baume, and Reagent, Sp. Gr. 1.18.

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FOR AMERICAN INDUSTRY

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In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver



Buying fasteners is no problem...IF

...your supplier has the contact facilities, know-how, production set-up—and a thorough-going interest in your individual order.

Scovill offers you all four. Each order is custom tailored and gets special handling. We do not run "bin" stock—our production is of bulk lots only, shipped direct to the user.

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Recessed Head Screws • Sems
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Industrial Fastener Sales, Waterville Division
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Availability of 550 Basic Materials Set Forth in NPA Pamphlet

BASIC MATERIALS, ALTERNATES LISTED AS AID TO PRODUCTION

Present availability of some 550 basic materials is graded and set forth in a four-page pamphlet published by NPA.

Titled "List of Basic Materials and Alternates," the pamphlet was planned as a guide for private business, the Armed Forces and Government agencies in the procurement and possible substitution of materials.

To Be Kept Up To Date

The list will be revised and brought up-to-date as changing conditions may require.

The 550 materials are listed, by primary groups, under the following three classifications:

1. Materials in Very Short Supply (for which alternates should be used wherever possible.)
2. Materials in Tight Supply (of which expanded use should be avoided by industry).
3. Materials in Fair Supply (which should be used, wherever possible, as substitutes for materials in classes 1 and 2).

Alloy Metals Scarce

In a review of the current strain on supplies of key materials, the new pamphlet says:

"Certain alloy metals, such as nickel, cobalt and tungsten, are in very short supply. All non-ferrous metals are tightening rapidly.

"Steel, in spite of capacity production and increased facilities, is becoming critical.

"Lumber is one large materials group that as yet has not been seriously affected."

Following are the more important materials in several groups, as listed by the NPA pamphlet:

Metals

In very short supply (total of 33 metals)—Aluminum, lead, copper, tin, zinc, nickel, tungsten, tin plate, heavy forgings, high alloy castings, die blocks, wire, sheet, nickel-bearing stainless steel, structural shapes, seamless and welded tubing.

In tight supply (total of 24 metals)—Vanadium, chromium, manganese, carbon steel hot-rolled bars, black sheet, plate, other stainless steel.

In fair supply (total of 6 metals)—Titanium (ferro), carbon steel and gray iron castings, small forgings and tool steel.

Chemicals

In very short supply (total of 77)—Acetylene, blood plasma, glycerine, sulfur and sulfuric acid.

In tight supply (total of 29)—Ammonia, borax, caustic potash, chlorine, hydrochloric acid, phosphorous.

In fair supply (total of 149)—Glycols, insulin paints, soaps, most vitamins.

Lumber

In very short supply (total of 5)—Exterior types of plywood and softwood.

In tight supply (total of 8)—Top grades of hardwoods and softwoods.

In fair supply (total of 14)—All species of lower grade types of hardwoods and softwoods, plus treated softwood products such as piling, poles, post and railroad ties.

Textile Leather and Bristle

In very short supply (total of 11)—Cotton (duck and webbing), domestic hides and skins, and some vegetable tanning materials.

In tight supply (total of 30)—Burlap, high tenacity rayon, new and processed wool, cotton, tire cord, yarn and cord fabric.

In fair supply (total of 14)—Reused wool.

Miscellaneous

In very short supply (total of 17)—Corundum, graphite, industrial diamonds, mica, most types of new rubber.

In tight supply (total of 14)—Fluor-spar, paper and paperboard.

In fair supply (total of 6)—Waste paper, reclaimed rubber.

Where To Get Copies

Copies of the "List of Basic Materials and Alternates" will be available at District or Regional Offices of the Department of Commerce. Up to five copies will be provided free of charge.

Additional copies may be purchased, for one cent each, from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

WOULD PROVIDE MORE NATURAL GAS FOR DEFENSE INDUSTRIES

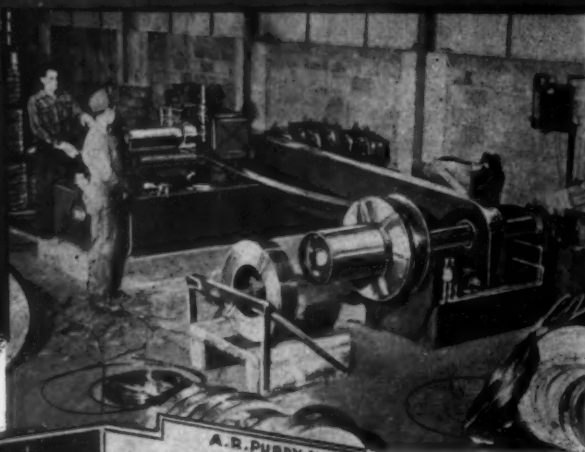
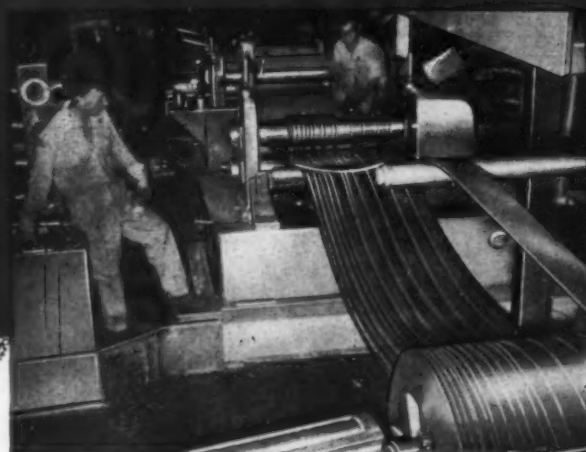
The Texas Gas Transmission Corporation outlined before the Federal Power Commission recently, plans for a \$45.3 million pipe line project that will bring more natural gas to defense industries in seven Mid-Western states and the Appalachian area. The company asked the FPC to authorize a 600-mile pipe line expansion that would raise the company's daily delivery capacity by 240 million cubic feet to over 900 million cubic feet a day. The new supplies are destined for present customers in Louisiana, Arkansas, Mississippi, Tennessee, Kentucky, Indiana and eastern Illinois. Texas also plans to increase sales by 95 million cubic feet a day to the Ohio Fuel Gas Co., serving communities throughout Ohio. Sales to Louisville Gas & Electric Co. for Louisville, will be increased from 40 million to 60 million cubic feet daily. (Please turn to page 220)

STEEL

When you need
in special widths and gauges
give your specifications to

SLITTING & SHEARING HEADQUARTERS

Let us also slit your obsolete inventory to fill your immediate needs of today.



PURDY!

• SPRING STEELS • COLD FINISHED
STEELS • COLD ROLLED SHEETS • COLD ROLLED STRIP
STAINLESS STEELS—ALL TYPES • DRILL ROD • ALUMINUM
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ALL WORK PERFORMED TO CLOSE TOLERANCES ON HIGH SPEED MACHINERY

**UNSURPASSED
QUALITY**
IN WORK GLOVES FOR
OVER 30 YEARS
GOOD LUCK
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LINE IN AMERICA!



GOOD LUCK GLOVE CO.

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**POWER FACTOR VISUALIZER
AVAILABLE FROM WESTINGHOUSE**

A Power Factor Visualizer that presents a simple explanation of the use of capacitors in solving low power factor problems is available from the Westinghouse Electric Corporation. Prepared in the form of a slide-rule-type chart, the visualizer makes it possible to follow a hypothetical case involving low power factor and shows how the installation of capacitors can solve this, as well as many similar problems.

The chart explains just what low power factor is, what it means to both the power user and the power supplier, and what benefits can be obtained by improving the power factor in the industrial distribution system through the installation of capacitors.

In connection with power factor improvement, capacitors will provide these benefits: greater capacity from existing electrical systems, better voltage conditions, improved motor performance through increased voltage, lower current and reduced line losses, decreased transformer losses, and more effective use of lighting equipment through higher voltage.

For a copy of the Power Factor Visualizer (SA-6739) write the Westinghouse Electric Corporation, Box 2099, Pittsburgh 30, Pa.

NEW TITANIUM PROCESS

A new process for the production of metallic titanium, which is expected to reduce costs by more than 80%, has been announced by the Navy. Titanium, because it is light, strong and corrosive-resistant, is being used in jet and gas turbine aircraft and for component parts in ship construction. A pilot-plant for its production will be operated by Horisons, Inc., Cleveland, Ohio, under contract to the Office of Naval Research. Further information is available from the Office of Public Information, Industrial Services Branch, Room 2A 858, The Pentagon, Washington, D. C.

**TOOL MAKERS URGED TO
EXPERIMENT WITH BORON STEELS**

As a result of a Government-Industry meeting concerning alloying metals held early in May under the auspices of The Research and Development Board and the Munitions Board of the Department of Defense, hand tool manufacturers are being urged to experiment with boron-treated steels as substitutes for critical alloys in making wrenches, pliers and other hand tools. The NPA has informed the Hand Service Tools Industry Advisory Committee that heavy defense demands for critically scarce alloy metals will compel many industries to seek substitutes. Boron steels have assumed new importance because of their ability to be hardened. Further details are available from the Office of Public Information, Industrial Services Branch, Room 2A 858, The Pentagon, Washington D. C.

(Please turn to page 222)



SELF-LOCKING NUTS



help PTC to "keep 'em rolling"!



PTC mechanic Bob Casey tightens Flexloc locknuts used on rear axle flange of PTC bus.

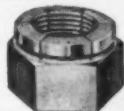
Every day thousands of Philadelphians depend on Philadelphia Transportation Company buses. To "keep 'em rolling", PTC's maintenance must be constant and thorough, since minor failures often cause major breakdowns.

For example, the hex nuts on bus rear axle flanges were being loosened by vibration, despite periodic inspections. Sheared studs resulted. Replacements were expensive, disrupted schedules and loss of riders' goodwill even more so.

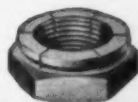
PTC tried FLEXLOC Self-Locking Nuts, found them a simple, economical solution to the problem.

FLEXLOCs stayed *tight*, eliminated shearing of studs. Yet FLEXLOCs were easy to remove when necessary, could be re-used again and again. Furthermore, FLEXLOC dependability reduced the number of maintenance checks needed, effecting additional savings.

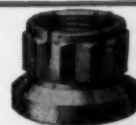
If you have to contend with vibration in your business, try FLEXLOC Self-Locking Nuts—free! Just tell us the size, and we'll gladly send samples.



FLEXLOC Self-Locking Nut, "regular" type.



FLEXLOC Self-Locking Nut, "thin" type.

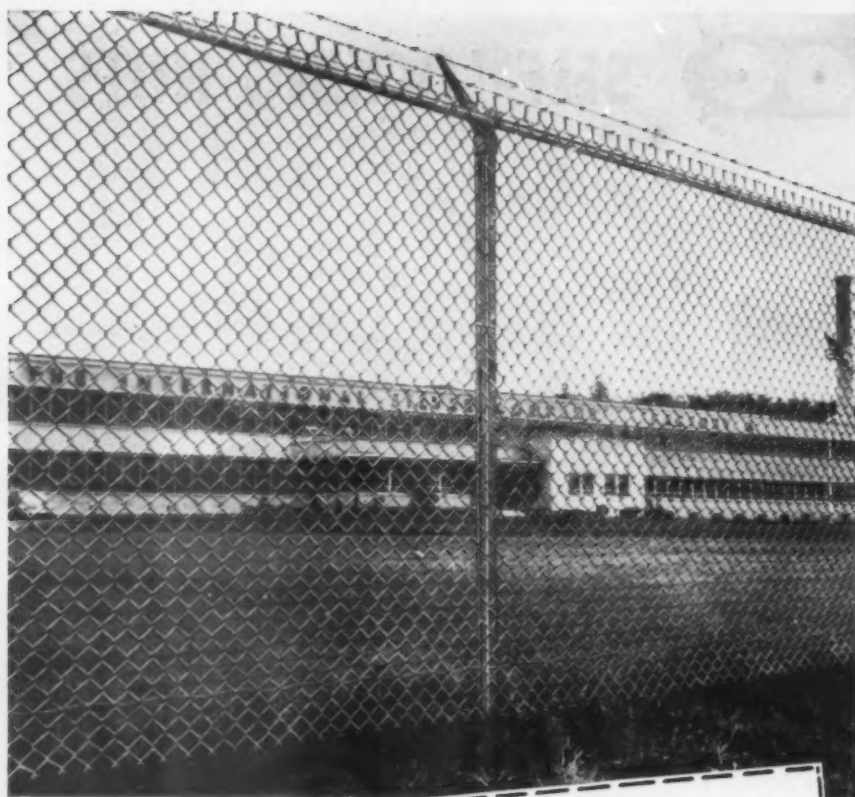


FLEXLOC Self-Locking Nut, external wrenching type.

SPS

STANDARD PRESSED STEEL CO.

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Anchor Fence Protects your plant from

Trespassers

GUARD your plant against snoopers, trespassers, agitators, troublemakers . . . keep children away from dangerous plant operations . . . protect outdoor stocks . . . control traffic in and out of your grounds . . . with a rugged, good-looking Anchor Chain Link Fence!

Anchor's H-Beam Line Posts are self-draining, rust-resistant, rigid. Deep-Driven Anchors hold the fence firmly erect and in line. Square Frame Gates

resist warping or sagging. Square Terminal Posts provide attractive appearance, extra strength and durability. These and many other Anchor Features add up to really *long-lasting* protection for your plant!

Call a trained Anchor Fence engineer to discuss your needs . . . or write for our catalog to ANCHOR POST FENCE DIV., Anchor Post Products, Inc., 6615 Eastern Ave., Baltimore 24, Md.

Anchor Fence

Nationwide Sales and Erecting Service

BOOKLET PRESENTS QUESTIONS AND ANSWERS ON CMP

The National Production Authority, U. S. Department of Commerce, announces publication of a new booklet, "80 Questions and Answers on the Controlled Materials Plan."

The questions selected for answer in the booklet were those most frequently asked at the CMP educational meetings held for businessmen recently in 20 key cities throughout the country. Answers were prepared by members of the Production Controls Staff who conducted the meetings.

The questions and the answers to them are classified under eight headings: General, Inventory and Inventory Adjustment, Authorized Production Schedules and Allotments, Allotment Numbers and DO Ratings, Forms and Applications, Repair and Replacement Parts, Warehouses and Distributors, Maintenance, Repair and Operating Supplies.

Free copies of the booklet may be obtained from the National Production Authority in Washington at the NPA Distribution Center in the lobby of the old GAO Building, or from the Distribution Section, Division of Printing Services, Department of Commerce. Copies will be available shortly from Department of Commerce field offices.

1 1 1

NEW BOOKLET ON INDUSTRIAL LIGHTING

"Planned Lighting for Industry" is the name of a comprehensive 47-page publication issued by the Engineering Division of General Electric's Lamp Department, with headquarters at Nela Park, Cleveland, Ohio.

Designated "Bulletin LD-4," the publication is seen as especially timely because it meets the needs of an industry which is in the process of gearing for defense production. Incorporating material prepared by Carl E. Egeler and E. A. Lindsay, G-E Illuminating engineers, it was edited by Karl A. Staley.

Profusely illustrated, it outlines the benefits of good industrial lighting in the form of increased efficiency, safety, and morale, improved quality, reduced spoilage, lowered costs, less eye strain, improved health and conserved manpower.

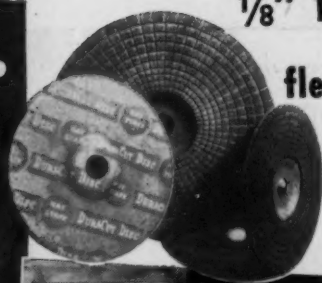
The bulletin then describes how to engineer lighting to various industrial tasks, discussing six principal lighting systems, and the use of specific techniques for special needs. It treats of the types of light sources and luminaires available for the various lighting requirements, and goes into the relationships of brightness and color conditioning.

Sections of the publication are devoted to protective lighting, wiring for the lighting system, maintaining the lighting system, and the lighting of service areas, offices and drafting rooms.

Single copies of LD-4 are available to interested people through the Inquiry Bureau of General Electric's Lamp Department, Nela Park, Cleveland 12, Ohio.

New... DuraCut Abrasive Discs

**1/8" THICK
yet
flexible**



*Blending weld on
stainless steel tank.*



*Smoothing weld
bead.*

IF YOU'RE LOOKING for a BETTER WAY...

... to blend welds and similar jobs, at a lower cost with greater productivity, investigate the vast possibilities of DuraCut Abrasive Discs. These new multiple layer abrasive discs, are *flexible, strong, safe*, offering many advantages over the ordinary single layer type of coated discs.

- MAXIMUM FREEDOM OF CHIP DISPOSAL (segment patterned)
- INCREASED LABOR SAVINGS (less disc changing)
- FASTER, SUSTAINED RATE OF CUT (built to grinding wheel specifications)
- 10-25 TIMES LONGER LIFE (over 1/4 million more cutting particles)
- WITHSTAND LONG CONTINUED FLEXING (extra matted reinforcing)

*The only really flexible
grinding wheel
ever offered!*

Order Today for a Trial:

Sizes available for immediate shipment
 7 x 1/8 x 7/8 } In any of these
 9 x 1/8 x 7/8 } grit sizes: 36, 54, 80

BAY STATE ABRASIVE PRODUCTS CO., Westboro, Mass.

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 Distributors — All principal Cities
 In Canada: Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ontario



*Removing rust and
scale.*



*Removing weld
spatters.*

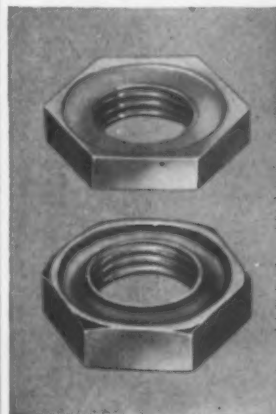


**THESE "NATIONAL"
LOCK NUTS ALSO
SOLVE VIBRATION
PROBLEMS**



National Drake Lock Nuts

Two-piece design: lower member fastens, upper nut locks. Especially designed for heavy rugged equipment meeting severe shocks.



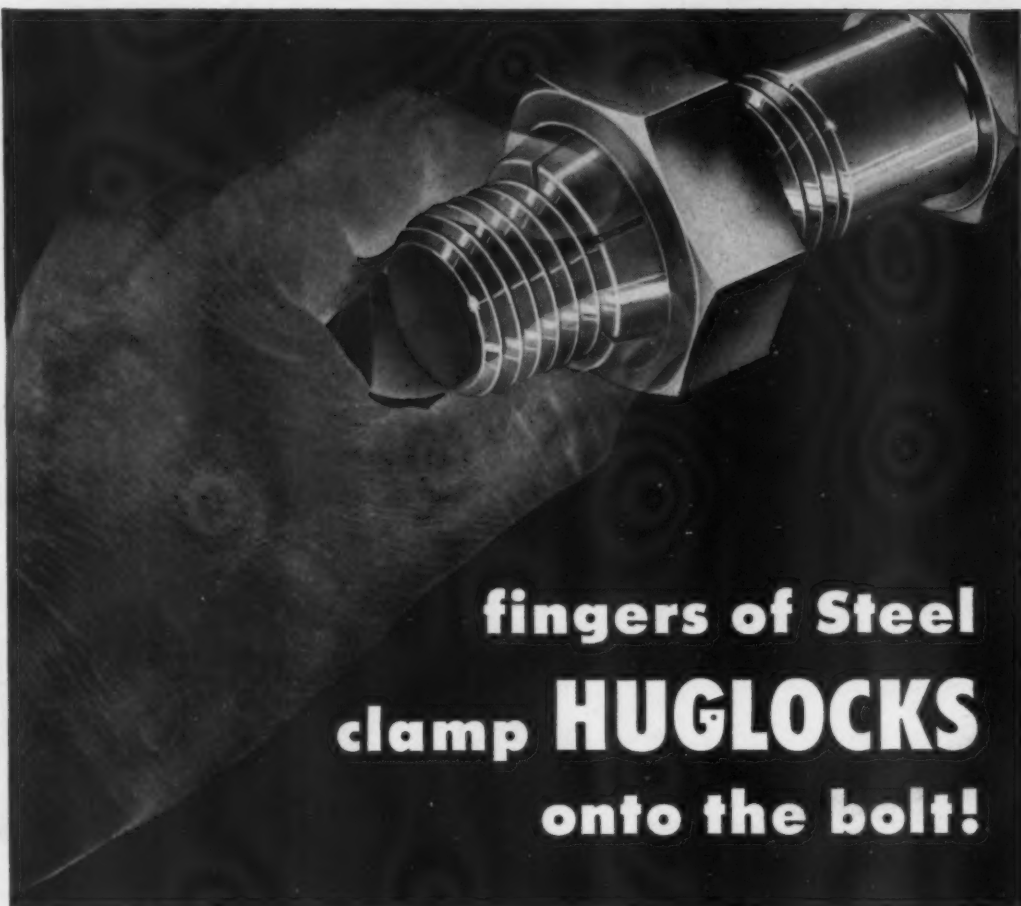
National Dynamic Lock Nuts

Designed for applications where a thin one-piece locking medium of light weight is needed and where strains are in shear only—never in tension.



National Marsden Lock Nuts

One-piece lock nut designed for effective locking force at minimum cost.



**fingers of Steel
clamp HUGLOCKS
onto the bolt!**

withstands vibration and shock loading

National Huglock Nuts are one-piece, all-metal self-locking nuts. They stay tight without the help of any other locking medium, save time and cost of other locking devices.

seated or unseated, Huglock holds tight

The steel "fingers" of Huglock's curved crown hug and press down on the bolt, creating a friction lock between the load carrying flanks of the nut and the bolt threads. This combined metal-to-metal hugging and locking friction is distributed over all the threads, so that Huglock holds firmly—seated or unseated—until removed with a wrench.

can be repeatedly re-used

Repeated removal and re-use of Huglock Nuts on the same bolt or a similar bolt will not destroy Huglock's locking action.

National Huglock Nuts are made to standard dimensions tapped American Standard Coarse (USS) or Fine (SAE) Thread series class 2 tolerances, from 1/4" to 1" bolt diameters. Available with left-hand thread when ordered in production quantities.



FOR ANY VIBRATION PROBLEM you'll find a "National" Lock Nut. Write for your free copy of illustrated 24-page booklet, "National Lock Nuts".



THE NATIONAL SCREW & MFG. CO.

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Pacific Coast: National Screw & Mfg. Co. of Cal.

3423 South Garfield Ave., Los Angeles 22, Cal.



WOLVERINE COPPER TUBING *first* ON D.O.


but we're not forgetting YOU

Copper and copper base alloy tubing is specified on many Defense Orders. Wolverine tubing is often selected because it is, as you know, quality-controlled from ore to finished product and, therefore, conforms to the high standards that must be met.

Incidentally, Wolverine has been manufacturing copper and copper base alloy tubing for well over thirty years.

But like all other manufacturers, we are cognizant of the division of our obligations. Your needs, too, are recognized. Not all the copper tube we produce daily is earmarked for emergency use. The maximum percentage allowed by government regulations is being produced to take care of essential domestic needs—your other needs.

Whatever tube you can get, utilize it to the best advantage. Employ it judiciously and we shall all get along very well until the emergency is over.



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Columet & Hecla Consolidated Copper Company
INCORPORATED
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Sales Offices in Principal Cities

Export Department, 13 E. 40th St., New York 16, N. Y.

Personalities



IN THE NEWS

Michael Dufal, Purchasing Agent and Production Manager of Universal Lubricating Systems, Inc., Oakmont, Pa., has



Michael Dufal

been elected Vice President. He joined the company in 1942 as foreman of the automatic screw machine department and was later promoted to plant superintendent.

John J. Bricker has been appointed to the newly created position of Director of Purchasing for International Business



John J. Bricker

Machines Corporation. He will be in charge of all the company's purchasing activities in the United States, and will have headquarters in New York City.

A graduate of Western Reserve University, Mr. Bricker joined IBM in 1935 as assistant sales representative in Cleve-

land. He subsequently served in sales and service capacities in various cities. In 1946 he was named manager in Hartford, Conn., the post he held until his new appointment.

E. Ross Grigg has been appointed Purchasing Agent of Brown, Boveri (Canada) Ltd., Montreal, Can. He was formerly Purchasing Agent of Leland Electric Canada Ltd.

Robert D. Buzzee, of the General Electric Company's chemical department, has been appointed buyer for the plastics division, with headquarters at Pittsfield, Mass. He held the position of manufacturing engineer in mold manufacture at the time of his appointment.

Merritt A. Cline, formerly Purchasing Agent, has been appointed Director, General Purchasing, of Alexander Smith, Inc., New York, N. Y. Joseph A. Tully has been appointed Director, Fiber Purchasing. Henry Fischer, Jr., formerly Assistant Purchasing Agent, has been named General Purchasing Agent.

George R. Merryman has been appointed Purchasing Agent of New Jersey Central Lines, New York, N. Y.

J. M. Claffey has been appointed Purchasing Agent of The Sillex Company, Hartford, Conn., succeeding S. J. Snegal. Mr. Claffey was formerly Purchasing Agent for the Whitlock Manufacturing Company, Hartford.

F. Albert Hayes, Vice President in Charge of Purchasing for the Bigelow-Sanford Carpet Company, New York, N. Y., was a featured speaker at the annual home furnishings show in Chicago.

Carl G. Peterson has been named Purchasing Agent of the Watertown, Mass., plant of Manning, Maxwell & Moore. Mr. Peterson was formerly Purchasing Agent of Crosby Steam Gage & Valve Company.

Frank A. Little has been named Director of Purchases of the Keystone Steel & Wire Company, Peoria, Ill. He succeeds



Frank A. Little

W. C. Erkert who started with Keystone 40 years ago, and who recently retired.

Mr. Little has been with Keystone for 15 years. He began as an industrial wire salesman, was advanced to manager of the Chicago district office in 1940. He was named Assistant Purchasing Agent in 1941 and Purchasing Agent in 1946.



Ruben A. Redard

Ruben A. Redard has been appointed Purchasing Agent, succeeding Mr. Little. Other appointments include the promotion of buyers Lawrence J. Ludwig and John E. Simon to Assistant Purchasing Agents, and the appointment of Gerald R. Bowen as Buyer.

(Please turn to page 228)



FEW COMPRESSOR DIFFICULTIES have been experienced since Suniso cleared the lines and valves of sticky sludge. Maintenance costs have greatly decreased. Suniso completely cleaned out the system in about 18 months, without the need for a shutdown.

PLANT EFFICIENCY GREATLY INCREASED BY SUN LUBRICANTS

A severe accumulation of sticky sludge clogged the refrigeration lines and froze the automatic valves. Compressor breakdowns were frequent. That was the situation a large dairy products concern was trying to overcome some years ago. There seemed to be no solution to the problem till a Sun man recommended Suniso Refrigeration Oil, pointing out how it had the inherent solvency to clean out the system without a shutdown. His advice was accepted and improved operation was immediately obtained. Large quantities of sludge were removed. In a year and a half, all the lines became completely free and clear, and all the automatic valves resumed their normal functioning.

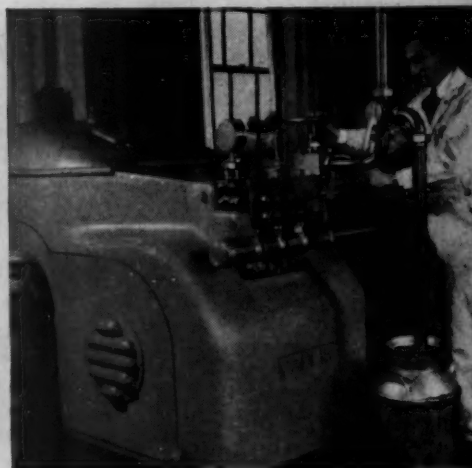
Because of these results and further engineering service, the company has gradually switched to Sun products for all its machines. This has reduced inventories 33 percent, upped production all along the line, and cut maintenance costs. For example, 50 percent has been saved on repairs by using Solnus Oil for the plant's more than 200 electric motors—ranging from ½ hp to 100 hp and from 600 rpm to 3,400 rpm. For a free copy of the illustrated booklet "Suniso Refrigeration Oils," write to Department PU-8.



FEWER REPAIRS ARE NEEDED on the bottle cappers because of Sunvis. The former oil gummed, causing the slides and guides to fail and necessitating as many as six capper shutdowns a day. Now more than one a week is unusual.



95 BOTTLES A MINUTE can be processed continuously by the washer, thanks to Sun Adhesive Pressure Grease. Shutdowns due to open gear failures occurred frequently in the past because the lubricant formerly used would not adhere.



NO CONDENSATION PROBLEM ever arises in connection with the homogenizers. Water can be drained off because Sunvis separates readily from it. Furthermore, Sunvis does not form sludge or gum like the oil it replaced.

SUN INDUSTRIAL PRODUCTS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL



Harry L. Erlicher, Vice President of the General Electric Company, Schenectady, N. Y., has been named special assistant to Under Secretary of the Army, Archibald S. Alexander.

Mr. Erlicher will be in charge of Army procurement and production expediting in the office of the Under Secretary. He has been a part-time consultant on procurement matters for the Under Secretary since January, 1950.

Widely known throughout industry and the Government as an authority on purchasing, Mr. Erlicher retired on June 30 from General Electric, the company in which he rose from messenger boy to vice president.

Along with his duties as G-E vice president, in charge of purchasing and traffic, he served on such groups as the Hoover Commission, which studied the organization of the Government's Executive Branch; and was a member of the Citizens Committee for the Hoover Report; numerous boards which handled industrial problems connected with the war and defense efforts; the Industry Advisory Committee on Purchasing Strategic and Critical Materials and others.

Throughout the years with General Electric, Mr. Erlicher moved through a series of positions, each a little bigger and more heavily loaded with responsibility than the preceding one. In 1910 he was a buyer. Thirteen years later he was assistant purchasing agent, and in 1931 general purchasing agent.

The G-E board of directors elected Mr. Erlicher a vice president in 1940. At that time, he had been with the company 40 years, and had attained the position of chief of purchasing and traffic.

As vice president in charge of purchasing and traffic, Mr. Erlicher has been not only one of General Electric's staff officers but has also directed the operations of the Purchasing Department, located here at the company's general offices.

During World War II, Mr. Erlicher frequently was called to Washington to meet with Government officials. Upon the establishment of various organizations to handle industrial problems connected with the war effort, he was made a member of the Defense Advisory Committee of the Copper and Zinc Industries. He served on other Government committees, and also served with the



Smaller War Plants Corporation and the National Security Industrial Association.

William A. Sredenschek has been appointed Manager of Materials and Purchasing for the General Electric Company, Schenectady, N. Y. Formerly assistant to Harry L. Erlicher, recently retired Vice President in Charge of Purchasing and Traffic, Mr. Sredenschek will assume managerial duties previously held by Mr. Erlicher.



William A. Sredenschek

An electrical engineering graduate from Penn State College, Mr. Sredenschek joined G.E. in 1921 as a student engineer on the test course. After assignments in the testing department, including that of assistant general foreman, he entered sales training and became assistant supervisor and then supervisor of that department. In 1936 he was appointed assistant to the vice-president in charge of apparatus department sales. In 1940 he became assistant manager of trade relations and special contracts, for the apparatus department, and a year later was named manager of that activity. He was named to his most recent post in purchasing in 1947.

William George, Jr., has been named Purchasing Agent for W. K. Mitchell & Company, Philadelphia, Pa.

Joseph Hillwood has been appointed Purchasing Agent of Brown Corporation, with headquarters at La Tuque, Quebec, Canada. He succeeds A. R. Lambert, who resigned to start his own business. Prior to coming with Brown Corporation, Mr. Hillwood was connected with the purchasing department of Aluminum Company of Canada, and before that with Canadian Marconi Company. K. V. Coombes is General Purchasing Agent of Brown Corporation.

Dr. F. E. Wood, Purchasing Agent of Midland College, Fremont, Neb., has been named Business Manager.

V. E. McCoy, assistant to the vice-president, has been named assistant Chief Purchasing Officer of the Chicago, Milwaukee & St. Paul Railroad, with headquarters in Chicago, Ill.

Gordon S. Yost has been appointed General Purchasing Agent of Willys-Overland Motors, Inc., Toledo, O. He succeeds Henry C. McCaslin, who was named Executive Engineer.

H. F. Roberts has been named Purchasing Agent at Lincoln-Mercury division's new gas turbine plant, Dearborn, Mich., which will build the J-40 jet plane for the Navy.

R. H. Campbell has been named Purchasing Agent for Burgess-Manning Co., Dallas, Tex.

James G. Horn has been appointed assistant to the Purchasing Agent at Plant 2, International Business Machines Corporation, Poughkeepsie, N. Y.

George Smith has been appointed Purchasing Agent for the Oklahoma State Highway Department, with headquarters at Oklahoma City.

Francis Phillips has been appointed City Purchasing Agent of Ottumwa, Iowa.

AMONG THE COMPANIES YOU BUY FROM

Charleston, W. Va.—The Wheelco Instruments Company. A new district agency, Engineering Products Company, has been established here. The office is under the direction of F. E. Anderson.

Stamford, Conn.—The Yale & Towne Manufacturing Company. William H. Holding has been appointed industrial sales manager for both the Stamford and Salem, Va., divisions of the company. He will direct the sale of Yale industrial locks and hardware used by other manufacturers as components.

(Please turn to page 230)

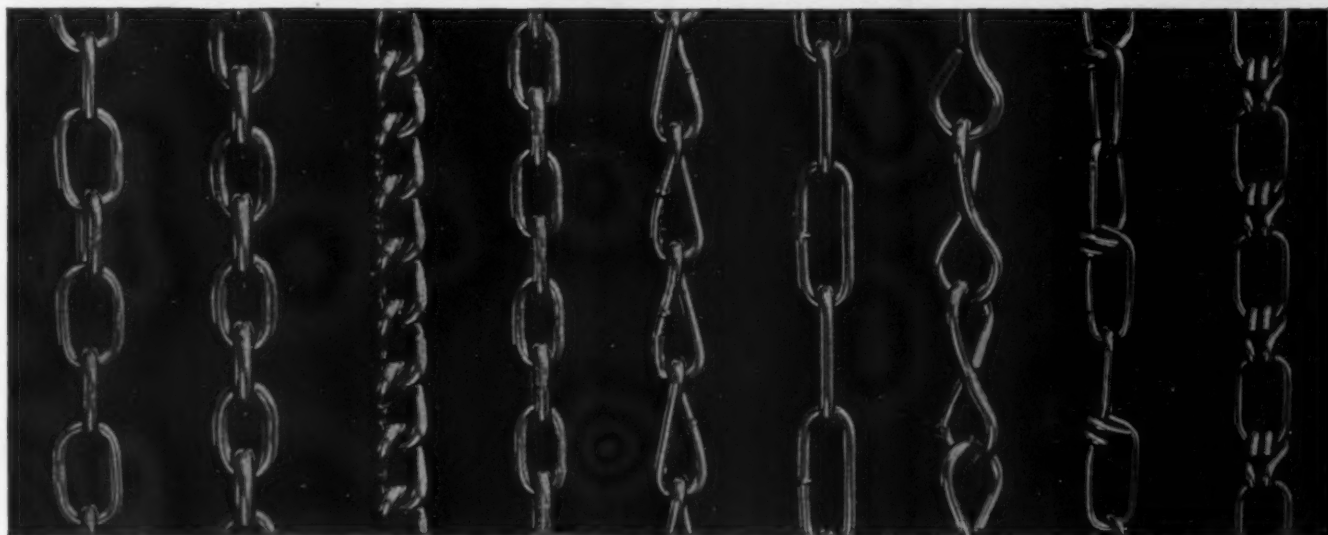
How Many Uses Do You Have for Chain?

CHAIN may be an important part of your product. Certainly, you find many uses for chain in your production operations . . . count them some day!

There is a good reason why chain is so important to industry: there is hardly a job of

hoisting, hauling, or holding that can't be done better and safer with chain.

Campbell makes chain for every purpose. And every link is inspected before it leaves the factory. So, when you need chain, look to Campbell for the *right* chain for your job.



Chain for every need . . . INDUSTRIAL . . . MARINE . . . FARM . . . AUTOMOTIVE



CAMPBELL CHAIN *Company*

MAIN OFFICE: YORK, PA.

Factories: York, Pa., and West Burlington, Iowa

MAKERS OF FAMOUS CAMPBELL LUG-REINFORCED TIRE CHAINS

SHENANGO*Centrifugal*
CASTINGS**... KEY TO SAVINGS**

How to save time and money on symmetrical parts!

YOU are in line for a double advantage when you turn to Shenango for symmetrical, tubular or annular parts, large or small.

First, such parts are produced by Shenango's advanced centrifugal casting process. This means *tougher* parts because of finer, pressure-dense grain, greater strength, better elongation and freedom from sand inclusions, blow holes and other often hidden defects. It also means less waste, less machining.

Second, Shenango has the modern machining facilities and skilled workmanship to give you semi-machined or finished parts...precisely as spec-

ified...at minimum cost! The heavy trunnion bearing shown above is one of the many types of parts, large and small, ferrous and non-ferrous, regularly produced at Shenango.

FREE BULLETINS

Find out if Shenango can help you save time, money and material. Bulletin No. 150 covers non-ferrous centrifugally cast parts; Bulletin No. 151 for parts of Meehanite Metal and Ni-Resist. Either or both are yours for the asking.

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Dover, Ohio

Executive Offices: Pittsburgh, Pa.

SHENANGO

ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL

Los Angeles, Cal.—The B. F. Goodrich Company. Five sales divisions, including industrial products, will have headquarters in a new 53,420 sq. ft. building being constructed here at 2940 East 44th Street. The move will bring under one roof sales staffs some of whose operations cover Southern California, and parts of Nevada, Arizona, New Mexico and Texas.

Plymouth, Mass.—Plymouth Cordage Company. Stanley Cheney, manager of the fiber department, and Henry Keyserling, controller, have been elected vice-presidents.

New York, N. Y.—Air Reduction Sales Company, a Division of Air Reduction Company, Inc. Edward H. Roper has



E. H. Roper

been appointed manager of the general technical sales department. With Air Reduction since 1936, Mr. Roper has served in various capacities in the general technical sales department.

Harrison, N. J.—Worthington Pump and Machinery Corporation. Sales and engineering functions of the water treating section have been moved to the company's plant here from Dunnellen, N. J.

St. Louis, Mo.—Bemis Bro. Bag Co. The following appointments have been announced: P. J. Hewitt, formerly sales manager of the Peoria, Ill., multiwall plant, has been promoted to assistant manager. W. F. Mulvaney succeeds him. H. O. Parrent, formerly in charge of the sales office at Phoenix, Ariz., has been appointed sales manager at Los Angeles, Calif. L. P. Sempek succeeds him at Phoenix. S. T. Newton is the new sales manager at the Memphis, Tenn., plant.

New York, N. Y.—Richardson-Allen Corporation. Dr. Harry N. Walker has been appointed vice-president in charge of sales.

Scranton, Pa.—Eureka Specialty Printing Company. C. Kenneth Coty has been named general sales manager.

Akron, O.—The Goodyear Tire & Rubber Company E. H. Dours has been appointed sales manager of the Pliofilm department.

(Please turn to page 232)



SOLVED:

How a leather or synthetic rubber VEE PACKING responds to pressure and lives to a tough old age

Vee Packings seldom work alone. They are usually used in sets of 3 to 6, and always with adapters.

Each Vee supports the one ahead: therefore, *all* must be alike in dimension and finish, so that when assembled in sets the lips of each Vee will make uniform contact with the surface to be sealed.

G&K-INTERNATIONAL can meet your requirements in leather or homogeneous synthetic rubber Vee Packings. In *leather* you benefit through quality control that starts with the raw hide and follows through precision manufacturing to the finished packing. In *synthetics*, full laboratory facilities and modern equipment carry the job from formula to final inspection. In *both*, advanced engineering know-how and a stepped-up manufacturing program assure satisfaction.

See G&K-INTERNATIONAL for your packing needs in synthetic rubber compounds or leather. Meeting your high standard is our business.

For VEE PACKINGS in Grakone (Synthetic) and Leather
INTERNATIONAL PACKINGS CORPORATION
 BRISTOL, NEW HAMPSHIRE



AFFILIATED WITH
GRATON & KNIGHT COMPANY

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**Ask the
 Graton & Knight
 Salesman about
 Engineered
 Leather Belting
 for more
 Production-Power,
 and
 Orange® Line
 Textile Leathers
 that**

- **Cut Shuttle Cost**
- **Stop Kinky Filling**
- **Increase Profits**

**It's an idea —
 that pays**

Mt. Wolf, Pa.—Wickwire Spencer Steel Division, The Colorado Fuel and Iron Corporation. Charles P. Harlow has been appointed sales manager of the hardware products department.

Pittsburgh, Pa.—Edgewater Steel Company. B. T. Roe, formerly vice-president of Tracy Manufacturing Company, whose assets Edgewater recently acquired, has been elected vice-president in charge of sales of the Tracy division.

Cincinnati, O.—Dravo Corporation. John T. Edelen has been appointed sales engineer in the company's machinery division office here. He will cover the Kentucky area, including Louisville, and certain areas in southern Ohio.

North Chicago, Ill.—Cyclone Fence Division, American Steel and Wire Company. Carl A. Ten Hoopen, Sr., has been appointed assistant general sales manager. Joseph F. Boyce succeeds him as eastern district sales manager, with headquarters at Newark, N. J.

Detroit, Mich.—The Colson Corporation. Roy J. Anderson has been named sales engineer, with headquarters here.

Cincinnati, O.—The Philip Carey Mfg. Company. J. C. Rector, present Cincinnati district manager, has been named to succeed W. L. Steffens as sales manager-insulation division, when the

latter retires on January 1, 1952. W. H. Skinner, formerly district manager, will succeed Mr. Rector as Cincinnati district manager.

Houston, Tex.—Leeds & Northrup Company. The company's office here has been moved to 2480 Times Boulevard.

Reading, Pa.—The Carpenter Steel Company. Martin J. Holleran has been



Martin J. Holleran

appointed assistant manager of tool steel sales. He was previously sales engineer out of the company's New York City mill-branch warehouse.

Pittsburgh, Pa.—National Electric Products Corporation. Vincent P. Oatis, Jr., has been appointed sales engineer in charge of underfloor wiring systems.

Long Beach, Calif.—S. S. White Industrial Division. I. F. Thomas has been appointed manager of the newly established western district office, located here in the Times Building.

Stamford, Conn.—The Yale & Towne Manufacturing Company. James J. Morris has been appointed industrial sales representative for the Stamford Division. He will cover New England, upper New York state and Pennsylvania. Harold W. Treat has been appointed industrial sales representative in New York City and New Jersey.

Detroit, Mich.—Quaker Rubber Corporation, Division of H. K. Porter Company, Inc. A stock-carrying branch warehouse and sales office has been opened here at 872 W. Milwaukee Avenue. J. R. Alexander has been appointed district manager of the new branch, which will serve all of Michigan.

Philadelphia, Pa.—Paul and Beekman, Inc. Ernest R. Jacobsen has been named vice-president in charge of sales. He formerly was associated with Gould National Batteries, Inc. and The Thomas A. Edison Co., Inc.

Gary, Ind.—Reliance Electric & Engineering Company. Lloyd F. Giegel has been appointed branch manager of the company's sales office here.

(Please turn to page 234)



Yes, everyone wants Red Streak Sealing Tape. No other form of closure gives so much for so little!

Those Gumming Specialists

The BROWN-BRIDGE MILLS, Inc., Troy, Ohio

NEW YORK 5 E. 45th Street
CHICAGO 608 S. Dearborn
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PHILADELPHIA 1734 Spruce Street
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CLARK
 QUALITY INDUSTRIAL FASTENERS SINCE 1854
 FOR
 GREATER SECURITY
 FASTEN FAST WITH
 CLARK FASTENERS

They work easy . . . hold fast and firm with a dependability that has been characteristic of CLARK FASTENERS for almost a Century.

6-L-3a

CLARK BROS BOLT CO.
 MILDALE, CONN.

**BOLTS . . . NUTS
 RIVETS . . . SCREWS**

6 reasons *Why* NATIONAL ELECTRIC SHERARDUCT CONDUIT *is better!*



RAW PIPE

1. Made of "Spellerized" steel for easy bending and clean-cut threads.
2. Scale-free—inside and out.



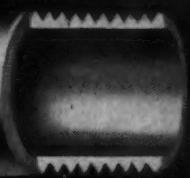
PICKLED

3. All rust-forming impurities removed before SHERARDIZING.



SHERARDIZED

4. Zinc alloyed with the steel on all surfaces.



SHERARDIZED THREADS

5. All threads have the same zinc protection as the walls.



6. Acid-resisting Shera-Solution baked into the pores for added protection.



PROTECTED AGAINST ACIDS

PROVED BY THE TEST OF TIME

National Electric Products Corporation
Pittsburgh 30, Pa.





"Here's that supplier you wanted..."

LEAVE it to a smart secretary to find a supplier *quickly* and *easily*. Long ago she got the habit of looking in the 'yellow pages' of the telephone directory.

She learned from her own shopping experience that you can find where to buy practically every type of product and service in the 'yellow pages.' So it's natural to turn to the same reliable buying guide for industrial products, too.

Next time you need a supplier in a hurry, reach for the 'yellow pages' of the telephone directory. In them you'll find the name, address and telephone number of manufacturers, distributors and agents for practically every type of industrial product.



AMERICA'S BUYING GUIDE FOR OVER 60 YEARS



Philadelphia, Pa.—The Fyr-Fyter Company. John T. Goslin, Jr., has been named sales representative in this area. His office is in the Western Savings Fund Building.

San Francisco, Calif. — Jenkins Bros. Howard J. Dauphinee has been appointed to the company's staff and will cover



Howard J. Dauphinee

the Northern California territory. He was formerly head of export sales for Enterprise Engine & Machinery Co.

Chicago, Ill.—Kaiser Aluminum & Chemical Sales, Inc. Product sales offices for electrical conductor and rod, bar and wire are being transferred to the company's general sales offices here. They have been located at Newark, O.

INDUSTRIAL DEVELOPMENTS

Armco Steel Corporation, Middletown, O., has granted the Allegheny Ludlum Steel Corporation a license to use certain of its processes in connection with the production of special electrical steels. The patents concerned apply principally to the manufacture of grain-oriented silicon iron alloy steels including newly developed electrical steels with special properties.

E. C. Atkins and Company, Indianapolis, Ind., has assigned the rights to manufacture and distribute the Atkins electric chainsaw to the L-M Equipment Company of Portland, Ore. All stocks of chainsaw units and parts at Indianapolis have been sent to the new manufacturer.

H. M. Harper Company, Morton Grove, Ill., has begun construction of a new addition to its plant. Scheduled for completion late this year, the new building will increase total floor space to 166,000 square feet.

Republic Rubber Division, Lee Rubber & Tire Corp., Youngstown, O., is constructing a large new plant addition for the production of wire and textile braided, mandrel built, lead press cured hose. Production will be limited to military requirements during the emergency.

(Please turn to page 238)

Kimpak* Float Packaging



Plastic
Aircraft Canopies

Cuts military shipping costs— reduces damage in transit!

From wartime packaging of a great range of military items—to peacetime protection of furniture, food, machinery and china! There's almost *no limit* to the type of products protected in shipment by KIMPAK* Float Packaging. But more important than its versatility is the fact that KIMPAK also provides optimum shipping protection at *lowest* true cost.

Delicate aircraft canopies for instance, are guarded against scratching and bruising; against shock, vibration and changes in humidity. Other finely machined parts are literally "floated" to their destination, free of the countless hazards of rail, truck, air or water transit—as well as storage. And soft, clean, grit-free

KIMPAK is as easy to apply as wrapping paper. Its many grades and thicknesses, too—in rolls, sheets or pads—let you "tailor" the packaging operation to your particular requirements.

So regardless of your packaging problem—and especially if you are engaged in the shipment of defense materials—it will pay to investigate the better protection and economy of KIMPAK Float Packaging. For complete information, including prices, see your nearest KIMPAK distributor listed in classified telephone directories under "Packing Materials" or "Packing Materials—Shipping"; or write to Kimberly-Clark Corporation, Neenah, Wisconsin.

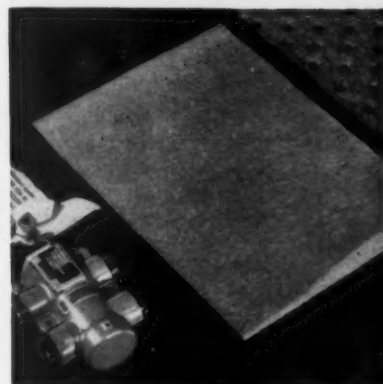
Kimpak

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES

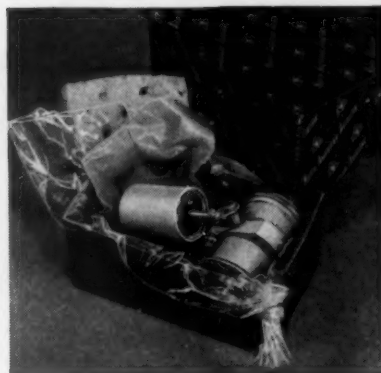


CREPED WADDING

*T. M. REG. U. S. PAT. OFF. & FOREIGN COUNTRIES



Hydraulic Relief Valve—protected by Grade A paper, ½ inch KIMPAK Creped Wadding, and foil-lined Kraft pouch.



Pressure Control Valve—protected by Saran moisture vapor pouch, KIMPAK, Grade A paper and Metal Edge box.



Selector Valve—protected by Saran moisture vapor pouch, KIMPAK, Grade A paper and Metal Edge box.

All photos courtesy of North American Aviation, Inc.

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Please send me free, the following illustrated KIMPAK booklets:

- ☐ Military Packaging
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In every arm of the service, today, Veeder-Root Counters are performing countless confidential missions "by the numbers" ... bringing raid and discomfort to the enemy.

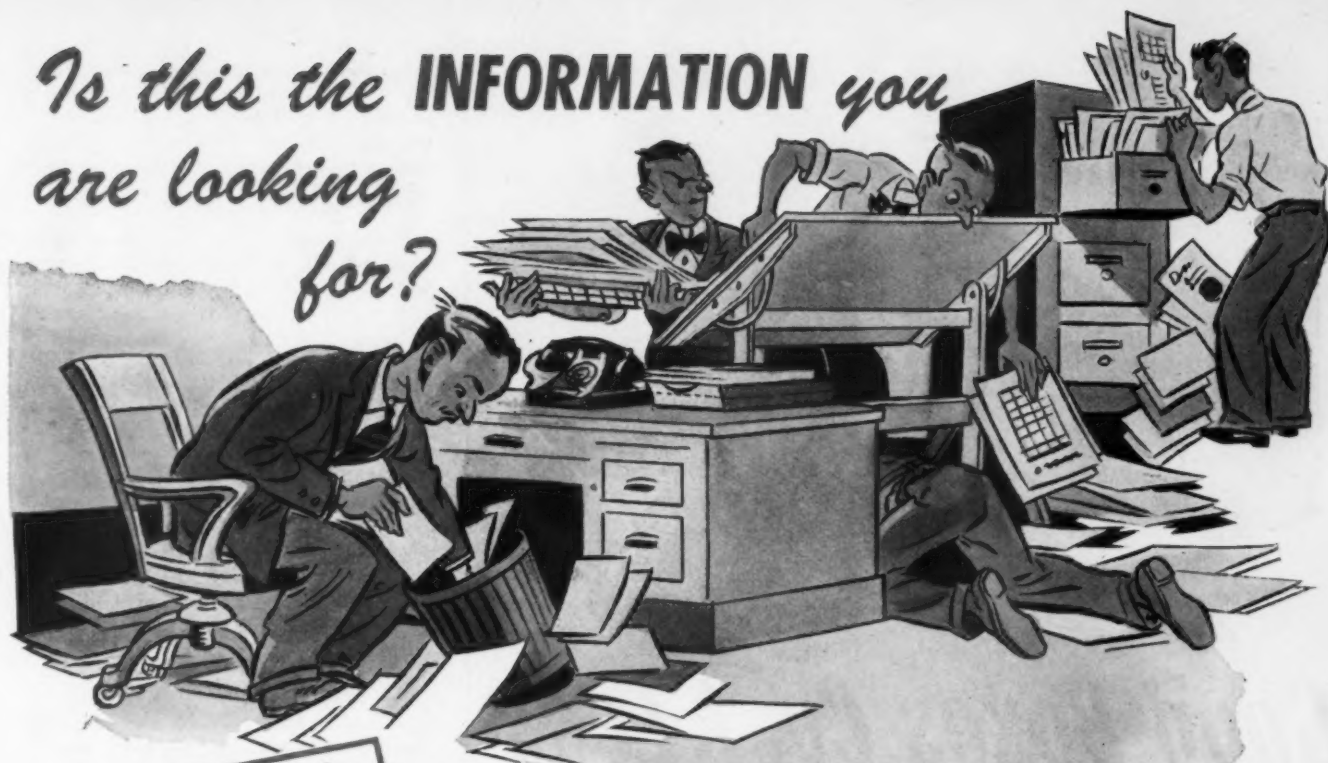
Now if you, too, have a military mission in manufacturing that counts

high up in the D-O's ... and you are in need of some phase of *Countrol* ... then let's talk it over.

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"The Name That Counts"
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VEEDER-ROOT COUNTERS *"Count Everything on Earth"*

Is this the **INFORMATION** you
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for?



SHEET SIZES

Gauge #36B&S (.0050) and heavier
Width $\frac{1}{4}$ " to and inc. 14"
Lengths Commercial
Circles 2" to 14" in dia.
Coils or Rolls Gauges .090 and thinner

SPECIFICATIONS

U.S. Navy	46-B-14
Federal	QQ-B-746
A.S.T.M.	B-103-42T
A.M.S.	4510
S.A.E.	77

TEMPERS

	B. & S. Numbers	Tensile Strength Lbs. Per Sq. In.	
		Min.	Max.
Soft	0	40,000	55,000
Half Hard	2	55,000	70,000
Hard	4	72,000	87,000
Extra Hard	6	84,000	98,000
Spring	8	91,000	105,000
Extra Spring	10	96,000	109,000

Based on Tests of Sheet .040 Thick

USES

Springs
Diaphragms
Fuse Clips
Lock Washers
Perforated Sheets
Thermostatic
Controls
Microphone
Assemblies
Electrical Devices

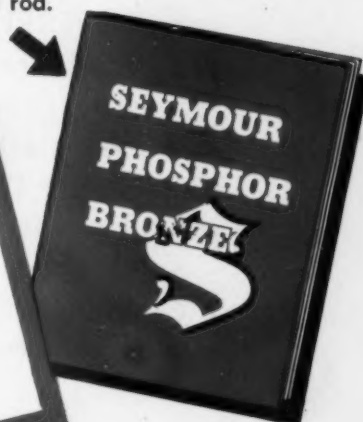
PROPERTIES

Elongation % in 2"	Spring Temper	Soft
Rockwell B $\frac{1}{16}$ " Ball	1.5	50
100 KG Load	95	30
Density—lbs. per cu. in.		.322
Elec. Cond %		16.5
I.A.C.S. at 20° C.		47
Thermal Cond. BTU		Excellent
Polishing		

SEYMOUR No. 950 Grade A Phosphor Bronze

95% Copper • 5% Tin

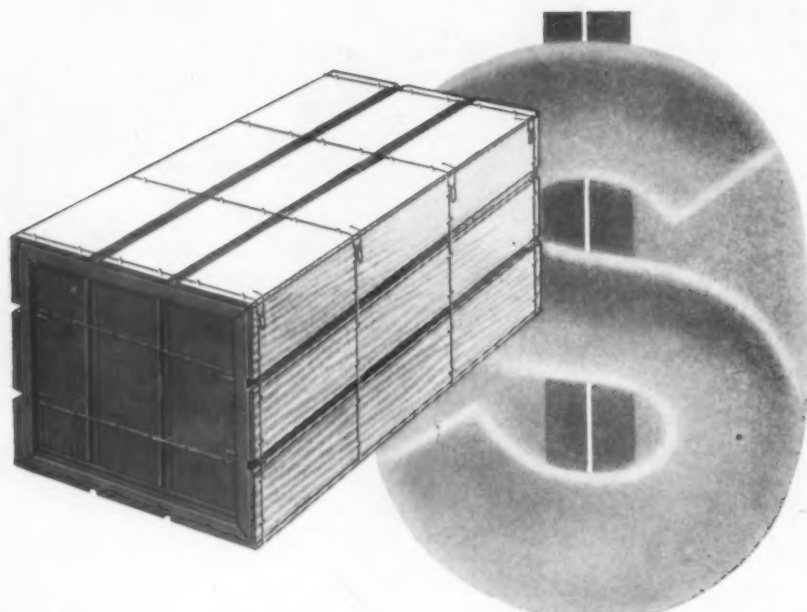
Outstanding characteristics of Seymour Phosphor Bronzes are their great toughness, ability to retain resiliency under countless flexures, resistance to wear, good electrical and thermal conductivity, good bearing qualities, high resistance to corrosion. Write for your copy of SEYMOUR PHOSPHOR BRONZE containing important data on sheet, wire and rod.



THE SEYMOUR MANUFACTURING COMPANY, SEYMOUR, CONN.

SEYMOUR





Good Boxes Cost Less



SUPERSTRONG boxes and crates—designed and constructed for your product alone—have a lower overall cost than just ordinary containers.

First cost is by no means the last cost. **SUPERSTRONGS** save on shipping space, reduce weight, occupy less storage space, cut down on damage claims. Total saving in dollars over the course of a year is often considerable.

Contact us for full information on the complete **SUPERSTRONG** line of quality shipping containers.

WIREBOUND BOXES and CRATES
WOODEN BOXES and CRATES
CORRUGATED FIBRE BOXES
BEVERAGE CASES
STARCH TRAYS . . . PALLETS

RATHBORNE, HAIR and RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

Continental Can Company, New York, N. Y., will install a new paperboard machine at its Hopewell, Va., plant. The machine will trim 250", which is larger than any other paper machine now operating in this country.

Electro Machines, Inc., Cedarburg, Wis., manufacturer of Doerr electric motors, has officially changed the company name to Doerr Electric Corporation.

Gould Paper Company, Lyons Falls, N. Y., subsidiary of Continental Can Company, has been sold to Ralph Luethi of W. Hartford, N. Y.

Cleveland Chain & Mfg. Co., Cleveland, O., has formed an industrial sales division. The new department offers the services of three consulting engineers, available to work with mill supply houses and industrial concerns on any problems involving sling and other industrial chains.

The Wel-Met Company, Kent, O., is planning construction of an additional plant at Salem, Ind. To cost upwards of \$500,000, exclusive of land and building, the new plant will triple Wel-Met's production of self-lubricating bearings and structural and mechanical parts made of sintered metal powder. Parts to be made at the new plant will be used on aircraft, tanks, trucks and other war material.

American Cyanamid Company, New York, N. Y., has announced that North American Cyanamid, Ltd., will expand facilities for the production of basic chemicals at plants in Niagara Falls, N. Y., and Welland, Ontario. A further step in the expansion program will be the installation of equipment which will increase American Cyanamid's capacity for the production of melamine at Willow Island, W. Va.

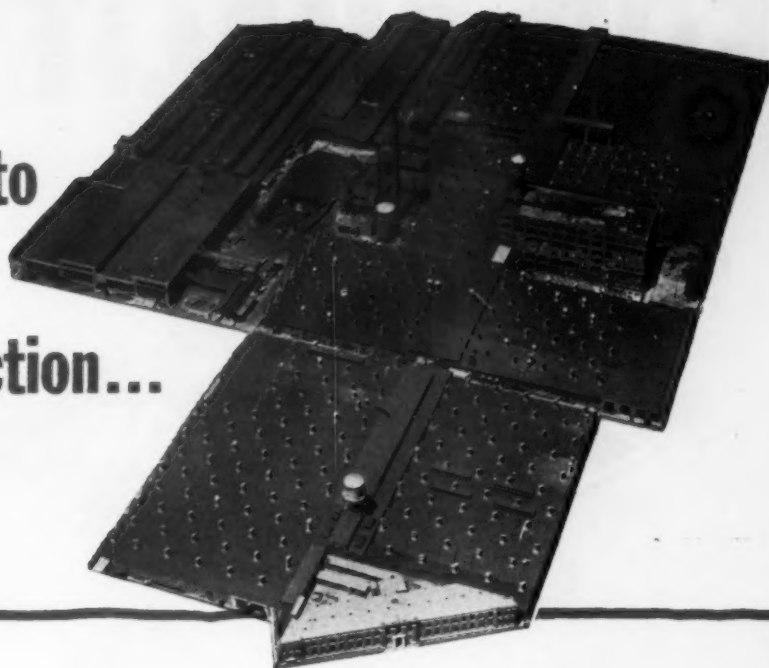
Celanese Corporation of America, New York, N. Y., under the terms of certificate of necessity granted by the Government, has started construction of a large paraformaldehyde plant on the same site as the present chemical plant at Bishop, Tex. The new expansion will increase the output of paraformaldehyde in this country several fold and will help to alleviate the shortage of a critical defense raw material.

Bacon Felt Company has transferred all its activity from Winchester to a new factory in Taunton, Mass. New specially designed felting equipment and larger production facilities have been installed.

Kennametal Inc., Latrobe, Pa., has purchased a 20 acre plot near Bedford and will erect a new factory building with a floor area of 20,000 sq. feet. The mining tool fabricating division will be moved there from the main plant to provide room for expansion of facilities for producing "Kentanium", the new heat-resistant titanium carbide.

(Please turn to page 240)

White takes the
"highroad" to
low cost
roof protection...



with **Carey** Roofing Materials and **FREE** Roof Check Service

This aerial view of White Motor Company's huge truck plant in Cleveland puts a real problem into sharp focus—that of keeping 30 acres of roof from sprouting leaks!

Since 1940, White has relied on Carey products and Carey's Free Roof Check Service to do the job at lowest cost. A job that's plenty tough in industrial Cleveland, where weather whips up its worst dishes and corrosive fumes "eat" roofs.

For proof that White's program for roof care pays off, check these facts: Guided by annual recommendations, prepared by Carey Roof Check

Experts, White forecasts roof performance for the year ahead; corrects roof defects as recommended with Carey materials. Thus small troubles never reach major proportions—and yearly roof costs stay within bounds of the budget.

Whether *your* problem is one of roof design, replacement, repair or maintenance, it will pay you to consult with Carey. Backed by over 78 years' experience, and unrivaled research facilities, Carey products and services are the finest obtainable—cost less in the long run. Call your Carey Industrial Sales Engineer or write direct.



Patented Carey Enamel Clad process used to cover worn-out slate roofs at White Motor Company's plant in Cleveland, Ohio.



Where artificial light is always in use, skylights are covered by the Carey Enamel Clad system. This eliminates costly labor for cleaning and replacing windows.



Built-up roofing at the White plant is maintained in prime condition by tough, long-lasting Careyclad and Carey Fiber Coating—especially formulated to withstand the grinding abrasion of weather and corrosive fumes.

**TAKE ADVANTAGE OF
CAREY'S FREE ROOF CHECK
INSPECTION SERVICE**



The Carey Roof Check Method is backed by more than 78 years of field experience by Carey roofing engineers. Following inspection, you get a written report on the condition of your roof, the flashings, parapet walls, coping, gutters, etc., and recommendations for maintenance or repair. Write today for details.

FROM THE HOUSE OF CAREY

Built-up Roofing • Careystone Roofing and Siding • Super-Light 85% Magnesia Insulation • Careyclad Asphalt Plank • Asphalt Points and Coatings • Industrial Flooring • Other famous products for industry.

Carey

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FOR QUALITY *Specify*



**Champion
MEANS
THE BEST!**



known — since 1900 — for over 2000
different types and styles of Quality
Lamps for general and special service
needs.



*Ask your industrial or electrical
supplier, or write direct to*



CHAMPION LAMP WORKS

Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.

Crane Packing Company, Chicago, Ill., has begun construction of new general offices and plant facilities. The new plant site, in Morton Grove, Ill., will cover 133,000 square feet when completed.

Naugatuck Chemical Division, United States Rubber Company, has announced a major expansion program aimed at doubling the production of its Baton Rouge, La., Paracril synthetic rubber plant. Plant capacity for the production of Paracril nitrile rubber, Nitrex latex, high styrene latex and high styrene resins will be brought to 30,000,000 pounds annually.

Detecto Scales, Inc., Brooklyn, N. Y., has purchased the industrial scale business of the Philadelphia Division of the Yale & Towne Manufacturing Company.

Olin Products Company, Inc., a subsidiary of Ecusta Paper Corporation, has been formed to distribute Olin cellophane in the packaging field. James L. Spencer is vice-president and director of sales. Temporary headquarters are at 270 Park Ave., New York, N. Y.

Pittsburgh Plate Glass Company, Pittsburgh, Pa., has announced that construction is underway on an \$8,500,000 expansion of chlorine and caustic soda producing facilities at the Natrium, W. Va., plant operated by Southern Alkali Corporation, a wholly-owned subsidiary.

Quaker Rubber Corporation, Division of H. K. Porter, Inc., Philadelphia, Pa., has begun a \$250,000 expansion of its hose manufacturing facilities to produce high pressure wire braided hose for the U. S. Air Force. Any surplus production will be made available to manufacturers of earth moving equipment, farm tractors, road building equipment and similar machines where high pressure hydraulic-controls are used.

Buchanan Electrical Products Corporation has moved its entire facilities to a new plant at 225 Highway 9, Hillside, N. J.

DC GENERATOR FLASHOVER DUE TO IONIZED GASES

Flashover characteristics of DC generators as result of overloads or short circuits have been studied by Naval Research Laboratory (ONR) with finding that flashing results from ionized gases over the commutator surface, produced by brush arcing. NRL scientists say improvement in commutation or removal of ionized gas reduces susceptibility to flashing; increasing the initial speed of rotation or initial load accentuates susceptibility of flashing due to overload currents. Further information on the subject is available from Technical News Letter, Magazine and Book Branch, Room 2C765, the Pentagon, Washington 25, D. C.

(Please turn to page 242)

For Accurate DETECTION MEASUREMENT CONTROL

of Industrial Atmospheric Hazards Specify Dependable **M·S·A INSTRUMENTS**

COMBUSTIBLE GASES



M.S.A. Combustible Gas Alarm

This widely-used instrument assures safe, continuous sampling of atmospheres for combustible gases and vapors. Its explosion-proof construction permits installation in hazardous areas. Visual and audible warning when concentrations exceed predetermined percentage of lower explosive limit. The Alarm may be wall mounted, if desired, and can be arranged for multi-point sampling with one instrument. Bulletin No. DT-6.



M.S.A. Explosimeter

Accurate, one-hand operation for detecting and measuring flammable gas hazards and for locating gas leaks. Designed for day-in, day-out use. Compact, light weight, sturdy, easy to use. Meter is calibrated for easy reading. Ask for Bulletin No. DN-7.



M.S.A. Lira

This infra-red gas and liquid analyzer is ideal for measuring atmosphere contamination and for process control. It is extremely accurate, with rapid response to changing concentrations. Designed for permanent installation and continuous recording. Bulletin No. DZ-4.



ALSO:

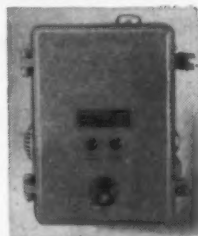
Combustible Gas Indicators
Benzol Indicators
Methane Alarms, Detectors, Recorders
Oxygen Indicators and Recorders

TOXIC GASES



M.S.A. Carbon Monoxide Tester

Employing the most advanced colorimetric method of carbon monoxide detection, this accurate instrument will indicate CO in air from 0.001 to 0.10 percent by volume. Simple to use; requires no special training. Accurate in the presence of water and gasoline vapors. Bulletin No. BY-1.



M.S.A. Carbon Monoxide Alarm

Whenever carbon monoxide reaches a predetermined concentration, this precision instrument gives a prompt, loud warning and visible indication. Designed for 24 hour service, the unit is enclosed in a weather-proof case. Bulletin No. DR-2.



M.S.A. Hydrogen Sulfide Detector

Quick detection and accurate measurement of low but dangerous concentrations of hydrogen sulfide in air and process gases. Detects amounts ranging from 0.0025 to 0.04 percent by volume. Supersensitive models available for 0 to 50 p.p.m. Bulletin No. DY-3.

ALSO:

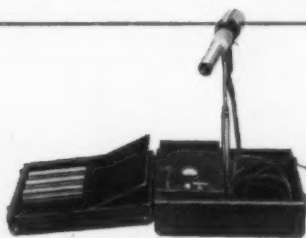
Carbon Monoxide Detectors, Indicators, Recorders
Mercury-Vapor Detectors
Vapor and Gas Analyzer
Nitrogen Dioxide Detector
Samplair (for toxic dust or mist determination)

HARMFUL DUSTS



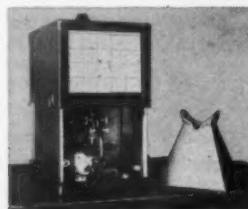
M.S.A. Midget Impinger

A compact, easy to operate instrument for obtaining accurate samples of particulate matter. Samples at the rate of 1/10 cubic feet per minute. Portable, self-contained, this unit is ideal for dust control and survey work. Bulletin No. CT-6.



M.S.A. Dust-Vue Microprojector

Permits rapid, easy counting of dust particles in collected samples, and particle size determination. Magnifies to 1000 times in size on ruled translucent screen—relieves eye-strain and permits greater accuracy. Bulletin No. CT-7.



M.S.A. Electrostatic Sampler

High efficiency in atmospheric sampling for all types of particulates including dust and fumes from molten metal and smoke. Features a portable head for sampling at various levels. Convenient to carry. Bulletin No. CT-9.

ALSO

Dust Counting Microscope
Cascade Impactor
Dust Counting Cells
Geiger Counter

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gine starters • Transformer rectifiers

Ground

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power supplies • Transmitter power supplies • Tele-
phone battery eliminators • Teletype and telegraph
power supplies

Naval

Shipboard and shore power supplies • Regulated
power supplies • Power supplies for electronic equip-
ment with magnetic amplifier control

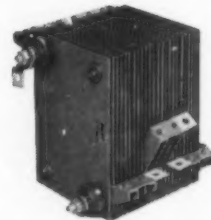
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pendable DC power!

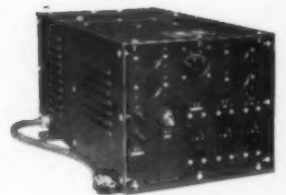
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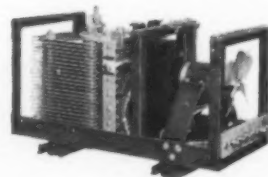
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Manufacturer of Selenium Rectifiers**



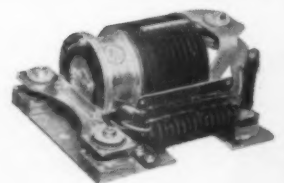
Heavy-duty Federal
Selenium Rectifier



FTR 3414-AS
Ground Aircraft
Power Supply



FTR 3146-B5
Aircraft Power
Supply



FTR 3141-CS-03
Clip-in Voltage
Regulator



Federal Telephone and Radio Corporation



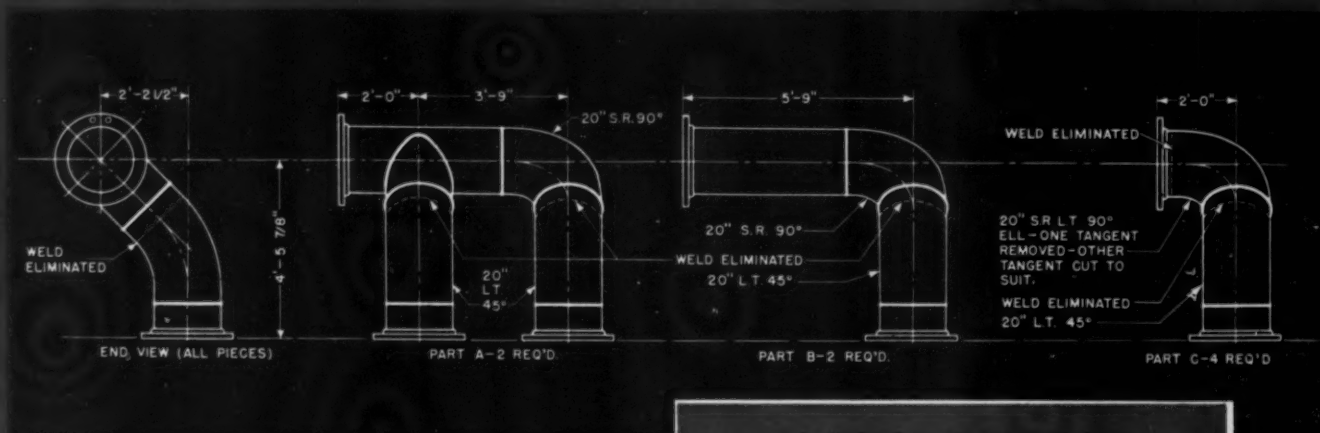
SELENIUM-INTELIN DIVISION, 100 KINGSLAND ROAD, CLIFTON, NEW JERSEY

In Canada: Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.
Export Distributors: International Standard Electric Corp., 67 Broad St., N. Y.

12%

COST REDUCTION...

in these piping subassemblies



**14 WELDS ELIMINATED
9'-8" OF 20" PIPE SAVED**

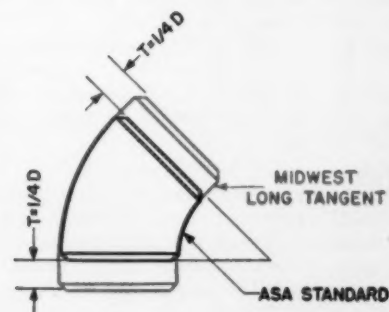
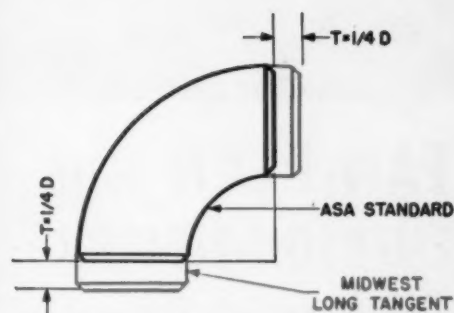
with MIDWEST

"LONG TANGENT" ELBOWS

Here is a concrete example of the extra cash value of Midwest "Long Tangent" Elbows. They saved 12% of the cost of this piping.

Each of the subassemblies shown above, if made of ASA elbows, would have required an extra nipple with an extra weld at the dotted line. With the Midwest Long Tangents, both the nipples and the welds were eliminated. Reduced material and labor costs made this substantial saving.

Other advantages of Midwest "Long Tangent" Elbows: pipe and fitting lined up more quickly and accurately, weld is removed from point of maximum bending stress, can be sleeved, slip-on welding flanges are more easily used, and they cost no more than standard elbows usually furnished. Ask for Catalog 48.



MIDWEST WELDING FITTINGS
Improve Piping Designs
and Reduce Costs

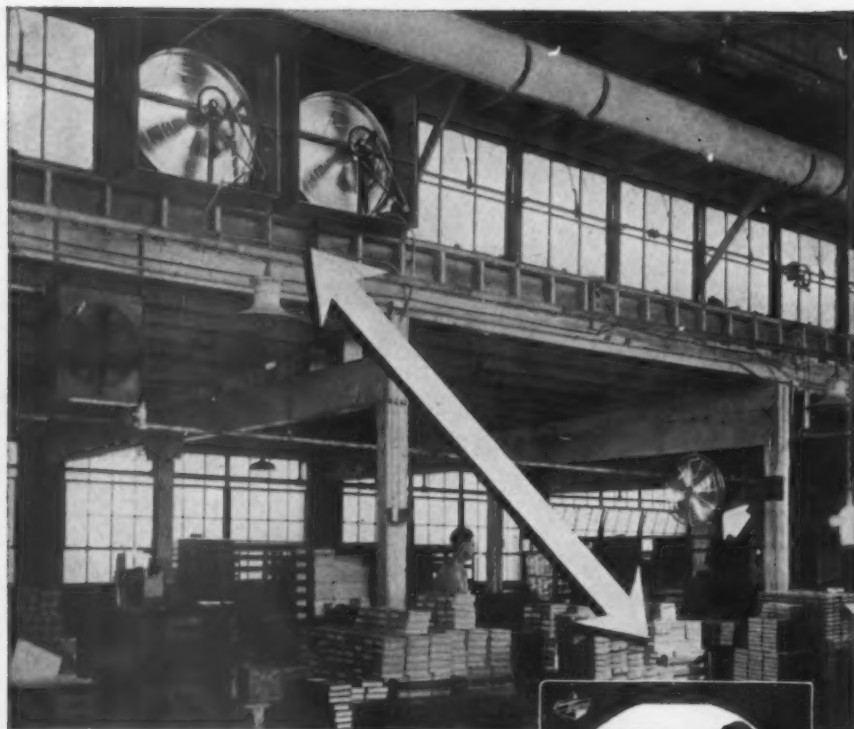
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"Active air" is air in motion . . . clean, fresh, invigorating air that pays dividends in greater employee efficiency and morale, improved public relations, too. The installation of Emerson-Electric Exhaust Fans puts "active air" in your buildings, provides dependable, economical ventilation the year around.

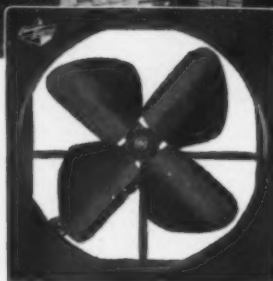
With a background of more than 60 years in fan manufacturing, Emerson-Electric offers valuable experience in the selection and installation of fan equipment, in a wide variety of applications. Fan-plan for the future . . . see your electrical contractor, or write for Bulletin No. 248.

THE EMERSON ELECTRIC MFG. CO.
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ELECTRIC
APPLIANCES



Belt-Drive Exhaust Fans

Quiet, low-speed models in 24" to 48" blade sizes, exhaust up to 19,350 c.f.m.



Direct-Drive Exhaust Fans

Quiet, efficient, heavy duty models in blade sizes from 12" to 30". Overlapping blades, ball-bearing or sleeve-bearing motors.

NEW GLASS RESISTS EFFECTS OF ATOM BOMB EXPLOSION

**Bomb Windows Open By Pressure;
Reduce Flying Glass Hazards**

The development of a special window to minimize the effects of explosive forces was recently announced by Dr. J. Hervey Sherts, glass product development director of the Pittsburgh Plate Glass Company. A glass-plastic laminate to be known as Flexseal Bomb Glass, the product is said to virtually eliminate the dangers of flying glass in explosion areas.

The Flexseal Bomb Window will resist normal atmospheric pressure because of the special properties incorporated in its design. When these are exceeded by a bomb blast or pressure wave, the window will open automatically by folding about its edges. This action releases the pressure, preventing the window frame from being blown in and greatly reducing the possibility of flying fragments.

The window consists of three layers laminated into a single unit. The outer layer is a sheet of glass, the middle layer a partially segmented sheet of polyvinyl butyral plastic, and the inner layer consists of four triangularly shaped pieces of glass, the central area edges of which register with the segmented edges of the plastic. The plastic extends beyond the glass edges and is bolted to the window frame to serve as hinges, thereby permitting the four segments to open like doors when the outer plate of glass is broken.

The vinyl plastic will stretch up to 400 per cent of its unstressed length and return to within 1/2 of one per cent without rupture. This safety-valve property, incorporated in the design, prevents high pressures from building up which would ordinarily blow the entire window, frame and all, into the room, exposing the occupants to many hazards.

Flexseal Bomb Glass windows have been tested and proved at Pittsburgh Plate's research division by using explosive force greater than that previously revealed for the Hiroshima type atom bombs at a distance of a mile.

After an explosion of sufficient force to open the bomb window, the four segments may be returned to position and retained there by many simple methods, even by using a wad of chewing gum.

The simplicity of restoring closure is a most important feature inasmuch as the problem of getting replacement glass to the scene of an explosion, such as one caused by an atomic bomb which covers a large area, would be difficult indeed. Interference with production, wastage and spoilage due to exposure to the elements would be held to a minimum with the Flexseal Bomb Windows.

Other Applications

In addition to its special properties for use in bomb explosion areas, the new Flexseal Bomb Window is said to be especially valuable for glazing and for hoods in laboratories, arsenals, munitions

(Please turn to page 246)



A
BLESSED
EVENT

GAIR
MULTICOLOR
CARTONS
Sell on Sight

A great stimulus to impulse buying, so essential
in today's SELF-SERVICE selling.
Watch your sales and profits increase with

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ASSURE A
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EMC MODEL 500
with A6 Gear Unit

EMC MOTORS

HELP BELL & HOWELL'S EYEMO CAMERA
SCOOP FAMOUS HISTORICAL EVENTS

EMC AND CYCLOHM

FRACTIONAL H.P. MOTORS
UNIVERSAL AND DIRECT CURRENT 1/1000 TO 1/4 H.P.
SHADED POLE 1/2000 TO 1/12 H.P. & INDUCTION TYPES 1/1400 TO 1/2 H.P.

*You can tell a motor
by the company it keeps!*

Teamed up with famous EMC MOTORS, Bell & Howell's EYEMO 35 mm camera has recorded more historic events than any other camera!

In filming such events as the storming of the Normandy beaches... the Bikini Atom Tests... in serving top Newsreel Cameramen... Bell & Howell has demanded the highest standards of performance and dependability from the components used in EYEMO production—that's why EMC's Model 500 MOTOR, with an A6 Gear Unit has been chosen. EMC Model 500 is a Universal Motor, rated 1/20 h. p. continuous duty, built for long life and trouble-free operation. Laboratory tested and proved in the field, more than one million of these motors are in use powering equipment of all types.

EMC Universal, Direct Current or Shaded Pole Motors and CYCLOHM Induction Motors are used for more than 300 applications—cameras, sewing machines, electronic equipment, vending machines, laboratory appliances and scores of defense applications—aircraft instruments, jeeps, tanks and others. Write today for information.

HOWARD

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DIVISIONS: EMC ELECTRIC MOTOR CORP. CYCLOHM MOTOR CORP.

(Continued from page 244)

plants and similar areas where explosion hazards are present.

Dr. Sherts stated that the new bomb window is by no means a cure-all. "If a building is located close to an atomic explosion nothing will protect it from the bomb's blast or pressure wave. Out to a distance of about a mile, authorities agree, steel, brick and wooden structures are likely to be damaged beyond repair and flattened in many cases. Farther out there is less destruction but flying objects and exposure may inflict serious damages," he stated. It is in these latter areas that Dr. Sherts believes the Flexseal Bomb Window will prove invaluable in times of disaster.

ALUMINUM SHADE SCREENING SOLVES SUN PROBLEM



Sun heat and glare problem along west exposure of Lockheed Aircraft plant Burbank, Calif., caused considerable worker discomfort. It was not considered that the venetian blinds used gave a satisfactory answer to the problem. As shown in the illustration, the application of Kaiser Aluminum Shade Screening, through its louvered construction, not only effectively blocks out the sun glare during the hot hours of the summer days, but also provides a soft diffused light without sacrificing visibility. Further information in regard to the screen may be obtained from Kaiser Aluminum & Chemical Sales Inc., 1924 Broadway, Oakland, Calif.

PARKER-KALON ISSUES REVISED ASSEMBLY HANDBOOK

Revised edition of its Assembly Handbook, is announced by Parker-Kalon Corp., 200 Varick St., New York, N. Y. Condensed into its 24 pages are the essentials of P-K Self-tapping screw selection, application information, recommended hole sizes and corresponding drill size numbers. The information is up-to-date, and many of the tables conform to the latest recommendations of the American Standards Association. The booklet was designed as a handy, pocket-size reference for production men as well as to help in training new assembly workers. Copies of this booklet, known as the No. 480 Booklet, are available for the asking.

(Please turn to page 248)

AN URGENT MESSAGE



Brass mill scrap needed to fill vital orders

Your Brass Mill Scrap has double value today. In addition to bringing you a good price, it will bring vital metal back to the production lines where it is sorely needed.

The defense program, as well as many civilian needs, is using up brass and copper as never before. In order to keep produc-

tion up and reduce the shortage, it is important that every pile of brass mill scrap in your factory—even if it is only a few hundred pounds—be put back in circulation. Call the Chase warehouse nearest you. We will see that your brass mill scrap is picked up at once.

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Chicago	Houston†	Newark	Rochester†	
Cincinnati	Indianapolis	New Orleans	St. Louis	(Sales office only)

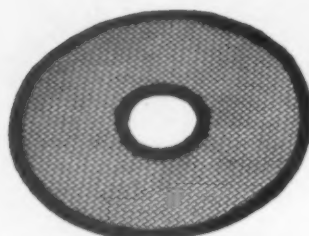
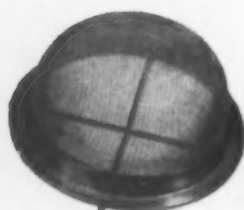
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Fabricated Wire Cloth Parts

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We have the facilities and skilled workers to make a great variety of wire cloth parts. We're doing a lot of work along these lines. We do the assembling in our own plant, using our own well known "Newark" Cloth. We bring to this work experience gained by several generations of wire cloth manufacturing and many years experience in fabricating and assembling parts. We'll be glad to quote on your next requirements. If you would like suggestions as to how best make use of wire cloth in the assembling we'll be glad to help. Send us an outline or print of your problem.



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BOOKLET ON ATOMIC DEFENSE FOR INDUSTRIAL PLANTS

"How To Prepare Your Plant For Atomic Attack" is the title of 32-page illustrated booklet on industrial plant security in the atomic age, being offered to all plants, large and small, by Walter Kidde & Company, Inc.

In simple language the booklet presents the latest factual information about the atomic bomb, its destructive potential, and its limitations; a guide to plant management in organizing personnel to cope with possible plant disasters; and recommendations for strengthening plant construction and sustaining production in the face of bomb attack.

Subjects discussed and illustrated in the new booklet include Why You Must Be Prepared; The Bomb (Blast effect, radiation, incendiary effect); Plant Defense Organization (Air raid warning, medical and first aid, fire fighting, police, salvage and repair); Shelter and Building Construction; and Planning For Sustained Production.

Copies of "How To Prepare Your Plant For Atomic Attack" may be obtained without cost from Walter Kidde & Company, Inc., Dept. A, 675 Main Street, Belleville 9, New Jersey.

The Kidde Company authorizes the reproduction of any portions of the booklet. They have not copyrighted it, purposely, in the hope that the information contained will be disseminated as widely as possible.

ANNOUNCE DEVELOPMENT OF "COLD" SYNTHETIC RUBBER LATEX

Development of "cold" synthetic rubber latex, the first to approach natural rubber latex in service and wearing quality, was announced recently by Naugatuck chemical division, United States Rubber Company.

"The development is a major step toward complete independence from natural rubber supplies in the Far East," said John P. Coe, vice president and general manager of the division.

"Practical, high quality synthetic rubber latex (latex is minute particles of rubber suspended in water) which can be used as an alternate material for the natural product has been a major bottleneck since commercial production of synthetic rubber started 10 years ago," Mr. Coe said.

"The need has grown particularly acute with the sharp rise in natural rubber prices since the start of the Korean war.

"Many types of synthetic rubber latex have been produced experimentally but the new 'cold' varieties are the first of the GR-S or general purpose type, which promise to compete with natural rubber latex in large volume applications in the rubber industry.

"Actually there is no one all-purpose type. Seven varieties of cold rubber latex have already been developed. As research progresses, many more will undoubtedly be possible. This means that synthetic latex can be tailor-made for specific ap-

(Please turn to page 250)



Price Guide No

Price Guide No. 1

IF IT'S TO BE HAD—WE HAVE IT!

...ing position in the metal finishing field, large volume operation, buying
...perience assure "If it's to be had—we have it!" And Udylyte sup
...ality. This is vitally important under today's condition
...es staff welcomes any order—from one pound
...tributes each month a six-page buy
...monthly and essential mar
...receive this v

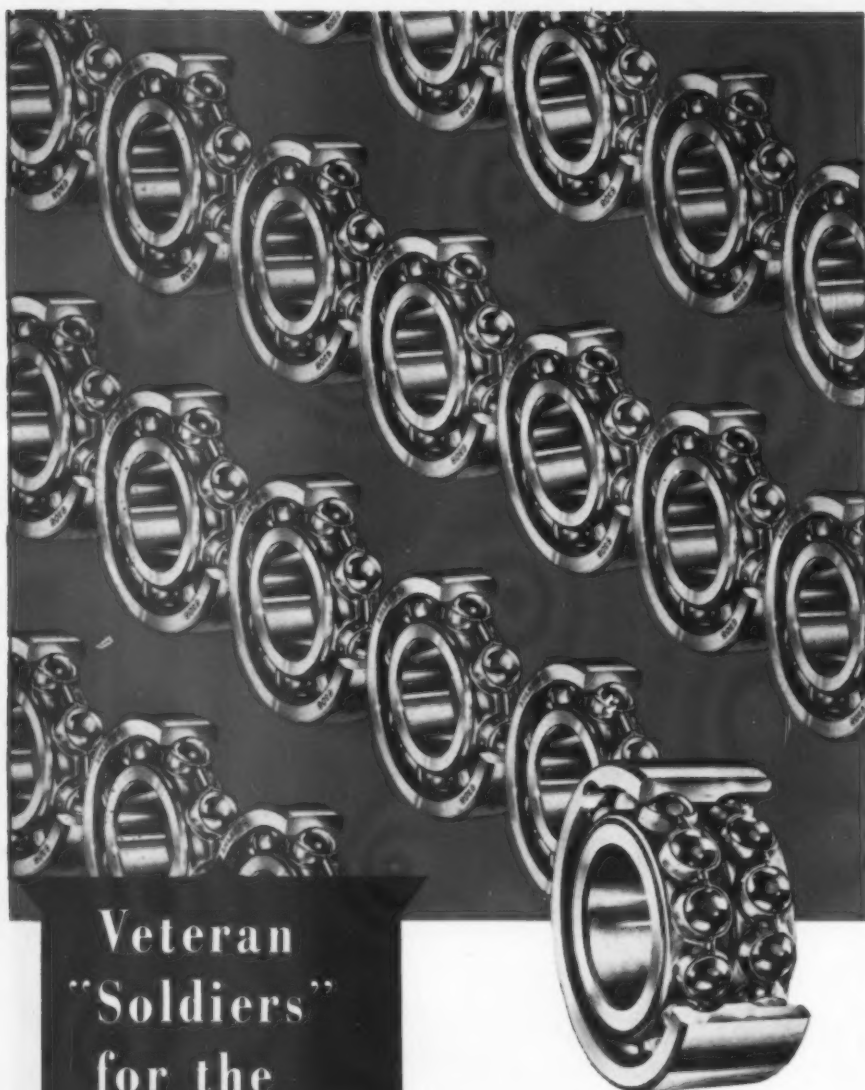
IF IT'S TO BE HAD—WE HAVE IT!

Udylite's leading position in the metal finishing field, large volume operation, buying power and years of experience assure "If it's to be had—we have it!" And Udylite supplies are laboratory-tested for quality. This is vitally important under today's conditions of forced substitutions. Our nationwide sales staff welcomes any order—from one pound to a carload lot. As an added service, Udylite distributes each month a six-page buying guide listing supply prices which are checked and reissued monthly and essential market data with a forecast based on latest information. If you would like to receive this valuable service write today giving your complete address. There's no obligation.

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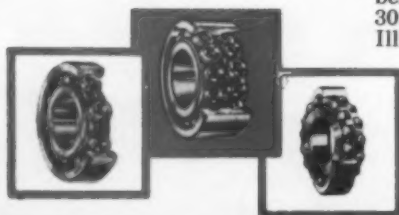
THE Udylite

DETROIT 11, MICHIGAN



Veteran "Soldiers" for the Production Lines

Today, more than ever, products must be "best ever" in construction and dependability. So must the machines depended on for uninterrupted production schedules. In this preparedness race, veteran soldiers, like Ahlberg precision ball bearings, are being specified for defense products and production machine maintenance as never before. The reason has been simply test and comparison, in search for the best, by manufacturers from coast-to-coast. Better products plus reduced operating and maintenance costs of the machines you use can well be yours by using Ahlberg precision ball bearings. Ahlberg Bearing Company, 3025 West 47th Street, Chicago 32, Illinois.



AHLBERG

PRECISIONeered Anti-Friction Products
Since 1908



(Continued from page 248)

plications. This versatility has not been possible with natural latex.

"For example, one variety of cold latex can be used as a 100 per cent replacement for the natural product in the manufacture of foam sponge for furniture cushioning, automotive upholstery, and mattresses. Still others show promise as replacements for natural latex in the manufacture of tires containing rayon tire cord, in several dipping processes, in the manufacture of sheet packing materials and brake linings.

"Cold synthetic rubber latex was developed by a team of research scientists at the Naugatuck, Conn., synthetic rubber plant operated by Naugatuck Chemical for the Reconstruction Finance Corporation. It is the result of more than five years of research and two years of experimental pilot plant production and product evaluation.

"Demand for cold latex is exceptionally high throughout the rubber industry although production is still limited. The current cold rubber expansion program inaugurated by the RFC in government-owned plants will make increasing quantities of cold latex available to the industry, however," Mr. Coe said.

1 1 1

NEW GULF DETERGENCY OIL GIVES PEAK PERFORMANCE

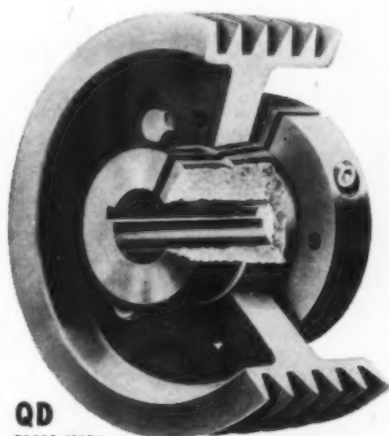
A new brand—Gulfpride H. D.—high detergency, was recently added to the Gulf Oil Corporation's line of Gulfpride oils. The company claims that the new product has remarkable ability to minimize engine deposits, clogged oil rings, sludge formation, rust and wear in gasoline engines, particularly in "stop-and-go" service. After conducting more than 10,000,000 miles of service tests, Gulf states the use of Gulfpride H. D. will:

1. Minimize and, in most cases, almost entirely eliminate the formation of engine varnish and sludge deposits caused by unburned gasoline residues which may contaminate the crankcase oil.
2. Minimize the formation of "mayonnaise type" sludge.
3. Reduce engine wear caused by corrosion or rusting of rings and cylinder walls under operating conditions encountered in "stop-and-go" driving service.
4. Prevent corrosion of alloy bearings in heavy duty operation.
5. Eliminate sticking of hydraulic valve lifters caused by engine deposits. In many cases it will free hydraulic valve lifters which have become stuck during use of other oils, thus avoiding the necessity of employing special engine cleaning procedures.
6. In new cars—provide peak performance—clean rings—low oil consumption—and eliminate valve lifter noise which may be due to deposits from fuels or lubricants.
7. In older cars—its exclusive use will extend engine life and overhaul periods by reducing wear and preventing further accumulation of deposits in oil ring slots, oil pump screens and lines.

(Please turn to page 252)



Pick the V-Belt Sheave which all industry likes best



QD
TRADE MARK

Split hub is clamped to shaft. Heavier taper-bored rim slides easily over tapered hub—no keyway obstruction on cone surface. Positive press fit on shaft. Large, long pull-up bolts also used as jack screws to remove rim.

Here's a 26-word description of the V-belt sheave that is used more than any other.*

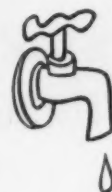
Two parts for easy handling—separately or together. Split hub and tapered rim make mounting easy. No realignment problem—clamped hub stays put while changing rims.

That's Worthington's QD—the original tapered cone-grip sheave that's preferred by men who have to install or change sheaves. The QD is easy to get on, easy to get off, yet always tight on the shaft—tighter than any other sheave on the market. Hubs for every bore—lower inventory cost.

For your machines, pick Worthington Multi-V-Drives with QD sheaves and Worthington-Goodyear EC Cord V-belts.

Complete range of stock sizes—prompt shipment from distributors everywhere.

*In addition to being one of the largest-selling sheaves, the popular Worthington QD design is licensed to many other sheave manufacturers. For your protection, dimensions are standardized to permit interchangeability.



The water
failed,

the light
almost failed...



but the distributor
"came through"

A hydro-electric plant, crippled by drought, was threatened with losing its franchise; was given 60 hours to bring its service up. Two Diesel engines were about to arrive when somebody remembered to order the V-belt drives.

A call to Anderson-Crane Rubber Company, Worthington distributor in Minneapolis, located four large D-section QD sheaves and 25 Worthington-Goodyear steel cable V-belts. These were rushed by car at night to the power plant, arriving just ahead of the engines. Within 24 hours, the plant was producing full power.

Once again, the Worthington distributor was on the job—with the needed supplies and the prompt service!

WORTHINGTON



THE GOOD RIGHT



HAND OF INDUSTRY

POWER TRANSMISSION:
sheaves, V-belts, variable speed drives

PUMPS:
centrifugal, power, rotary, steam

AIR COMPRESSORS:
water-cooled, air-cooled

Worthington Pump and Machinery Corporation

Multi-V-Drive Sales Division
Buffalo, New York

Send Bulletin V-1400-B7F on
Worthington Multi-V-Drives.

Name

Company

Address Zone State ...

MV.1.3

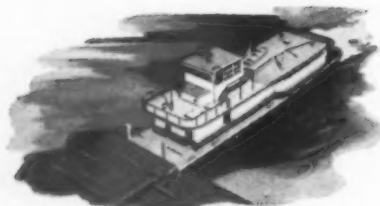
Which ALLOYS ARE Right FOR YOUR FASTENING JOBS ?



SILICON BRONZE nickel-plated screws are used in the fabrication of this new type high intensity airport runway light. On the job through sleet and snow, rain and blistering heat—CORROSION RESISTANCE for dependable night-after-night operation is a necessity.



STAINLESS STEEL . . . because of its resistance to CORROSIVE lactic acid . . . is a "must" in milk holding tanks where interiors must be kept free of pitted surfaces and other bacteria-breeding flaws. Making fastenings of this alloy is a standard practice at Harper.

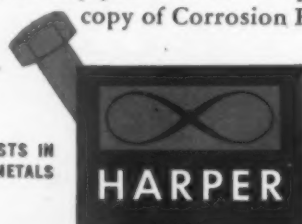


MONEL and BRASS bolts and studs by Harper go into the big diesel engines that power mighty river towboats. In this service, lasting resistance to CORROSION is vital. Engine HEAT, too, puts demands on parts . . . another reason for specifying Harper Everlasting Fastenings.

HARPER can help you decide . . . THEN CAN PROVIDE

No matter *what* your problem . . . if the solution lies in bolts, screws, nuts, rivets or accessories of non-ferrous or stainless steel . . . Harper has it or can produce it. Over 7000 items in stock and ready for delivery from warehouses and distributors coast to coast—backed by modern mass production facilities and fastenings specialists who are ready to help you. Mail the coupon for complimentary copy of Corrosion Resistance Computer.

SPECIALISTS IN
ALL NON-CORROSIVE METALS



EVERLASTING FASTENINGS

The H. M. Harper Company
8222 Lehigh Ave., Morton Grove, Ill.
Please send my copy of Corrosion Resistance Computer. (Please print.)

Name.....
Address.....

QUART-SIZE FLEXIBLE POLYETHYLENE BOTTLE

The illustration shows new quart-size flexible bottles of Bakelite polyethylene produced by the Plax Corporation, Hartford 1, Conn., for heavy duty use in packaging and handling acids and other chemicals. The bottle, blown in one piece, is resistant to shock, temperature changes, moisture and most chemicals.



The translucence of the material permits easy checking of the contents. The neck is threaded to accommodate standard acid pour-out caps, while thread finishes for other types of standard closures can be supplied on special order. The bottles are now available in 1, 2, 4, 6, 8, 16 and 32-ounce sizes.

NEW TEXACO HEAVY DUTY ENGINE OILS

A new series of heavy duty engine oils, Ursa Oil X Sup. One 10, 20, 30, 40, and 50, has been marketed by The Texas Company for the lubrication of heavy duty gasoline engines and automotive-type Diesel engines which are operated under adverse conditions.

Among the factors contributing to the increase in the severity of lubricating requirements in certain types of these engines are design changes, use of a wide variety of fuels, and use of high sulfur content Diesel fuels. Increased engine deposits and greater wear have resulted from the use of such fuels, with other oils.

The new Texaco Ursa Oil X Sup. One series was developed by the company's research laboratories to provide a heavy duty lubricant for application wherever an oil meeting the requirements of U. S. Army Specification 2-104B, Supplemental List No. 1, is desired.

Laboratory and field tests revealed that this new heavily fortified lubricant provides the extra protection now required in severe but unsupercharged heavy duty engine service. It delivers satisfactory protection in service employing Diesel fuels up to 1.0 percent, or higher, sulfur content.

Economy was a primary concern in the development of the new oil which incorporates certain characteristics required in super duty engine lubrication without going to super duty engine oil cost.

(Please turn to page 254)



• Analyses to meet conditions where heat, corrosion, pressure and structural strength are involved.

• Sizes — 1/2 to 6 inches O.D.

• Wall Thickness—.035 to 1.000 inches.

GLOBE

**SPECIALIZATION GIVES YOU
UNIFORM HIGH QUALITY IN**

ALLOY STEEL TUBES

SEAMLESS — MECHANICAL — PRESSURE

TYPICAL ANALYSES:

Carbon Moly •

1 1/4 Chrome 1/2 Moly

1 3/4 Chrome 3/4 Moly

2 Chrome 1/2 Moly

2 1/4 Chrome 1 Moly

5 Chrome 1/2 Moly

7 Chrome 1/2 Moly

9 Chrome 1 Moly

AISI 1335 • AISI 2317 • AISI 2512 •

AISI 4130, 4140 • AISI 4615 •

AISI 8615, 8620, 8630, 8635, 8640 •

7% Ni. • 9% Ni.

TYPICAL APPLICATIONS:

Pressure Tubes — Superheater Tubes,
Condenser Tubes, Still Tubes,
Evaporator Tubes • Barrel Tubes •
Oil-Well Pump Barrels • Mechanical
Tubes • Aircraft Tubes • Propeller
Tubes • Rollers for Transmission
Chains



Globe engineers gladly give you the benefit of specialized knowledge and experience on the application of steel tubing in a wide range of services — mechanical — pressure — corrosion resistant.

When you specify Globe, you are sure of uniform high quality alloy steel tubes — the product of highly developed production facilities and specialized quality controls. Globe Tubes are thoroughly inspected and closely held within tolerance specifications. Write for the Globe general catalog.

Globe Steel Tubes Co., Milwaukee 46, Wis.
Chicago • Cleveland • Detroit • New York • Philadelphia
St. Louis • Houston • Denver • San Francisco • Glendale, Cal.

Producers of Globe seamless stainless steel tubes —
Gloweld welded stainless steel tubes — alloy — carbon
— seamless steel tubes — Globeiron (high-purity ingot
iron) seamless tubes — Globe Welding Fittings.



Fuller's "Hungry" Duster Gobbles up Dust!

You will find a Fuller Dry Duster more economical than dust cloths. Fuller Dusters are built of our special cotton yarn — whose millions of tiny fibrils reach out and hold (instead of scattering) huge quantities of dust.

In Fuller Dry Dusting Mops you will also find this special yarn, developed by our laboratory and produced under its supervision.

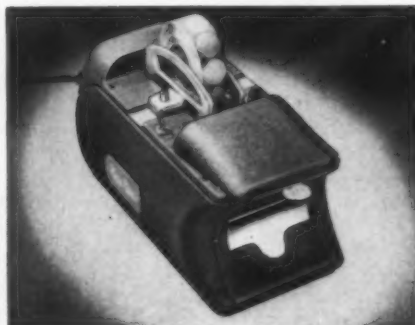


3554 MAIN ST., HARTFORD 2, CONN.
In Canada: Fuller Brush Co., Ltd., Hamilton, Ont.

ANNOUNCE NEW LINE OF SELF-PRIMING CENTRIFUGAL PUMPS

The Chain Belt Company, 1600 W. Bruce St., Milwaukee, Wis., has just placed on the market a new line of self-priming centrifugal pumps. This new line ranges in size from the small 1½" model 4M pump up to the 6" Model 90M pump. Capacities of these sizes range from 4,000 gph to 90,000 gph. Pumps are guaranteed to meet the capacity standards adopted by the Contractors Pump Bureau of the AGCA. The new Rex pump is designed for easy and inexpensive replacement of wearing parts. Removal of the easy-to-get-at cover plate makes it possible to replace or adjust practically all the wearing parts in the pump. Impeller shaft seal is never subjected to pumping pressure with the result that considerably longer seal life and more trouble-free pump operation is obtained. Bulletin 51-27 illustrates and describes the new Rex pump line in detail.

ELECTRIC DISPENSER PROVIDES SEMI-MATIC LABEL APPLICATION



New Kum Kleen electric dispenser, which feeds pressure-sensitive labels to the operator in a greatly expanded range of speeds, as well as providing faster starting and stopping action, is announced by the Avery Adhesive Label Corp., Monrovia, Calif. The new unit makes it possible to gear hand-labeling operations to production line speed without expensive equipment costs. Labeling speeds of operators have been increased as much as 500 percent.

The dispenser can be set to any pre-determined speed from 10 to 150 lineal inches of pressure-sensitive labels per minute, ready to apply without moistening. Where starting and stopping are important, the unit provides split second positive action at both ends of the cycle, and automatically resumes pre-determined speed of feed when re-started. The wide range of variable speeds permits synchronization of the dispenser to practically all production lines having either continuous or intermittent operation.

The new dispenser is designed to handle pressure sensitive labels on conveyor-belt rolls and cannot be used with loose labels, gummed labels or tape. It weighs but 17 pounds, and may be plugged in on either a.c. or d.c. 110-120 volts.

(Please turn to page 256)



"Look How Rudolph's Output Has Increased Since They Changed to the Right Cutting Fluid"

THE BEST MACHINE and the finest operator cannot do the best work without the *right* cutting fluid.

Stuart combines theory and practice to give you the right cutting fluid for the job. Here is an example:

In a large gear department, cutting fluid tests were run on Gleason Revacycles cutting 8620 gear stock, 179 Brinell hardness.

	"X" Oil	Stuart's SPEEDKUT "A"
Gears Per Tool		
Grind	1200	3200
Stock Removal to Recondition Cutters009"	.0035"
Price of Cutting Oil	33c/gal.	35c/gal.

There's a story! More production because of less downtime. Longer cutter life because of fewer grinds and less stock removal per grind. A lower actual cost for the cutting fluid.

You can get help like this from a Stuart Representative. Ask to have him call.

Are you receiving Stuart's Shop Notebook regularly?

Write, wire or phone

**GET MORE
PRODUCTION
Use The Right
Cutting Fluid**

STUART SERVICE
Goes with every Barrel
Offices in Principal Industrial Centers

D. A. Stuart Oil CO.

2727-31 S. Troy St., Chicago 23, Illinois

ATLAS CONVEYOR SELECTS

QUAKER CONVEYOR BELTING

For Longer Service... Tougher Hauls

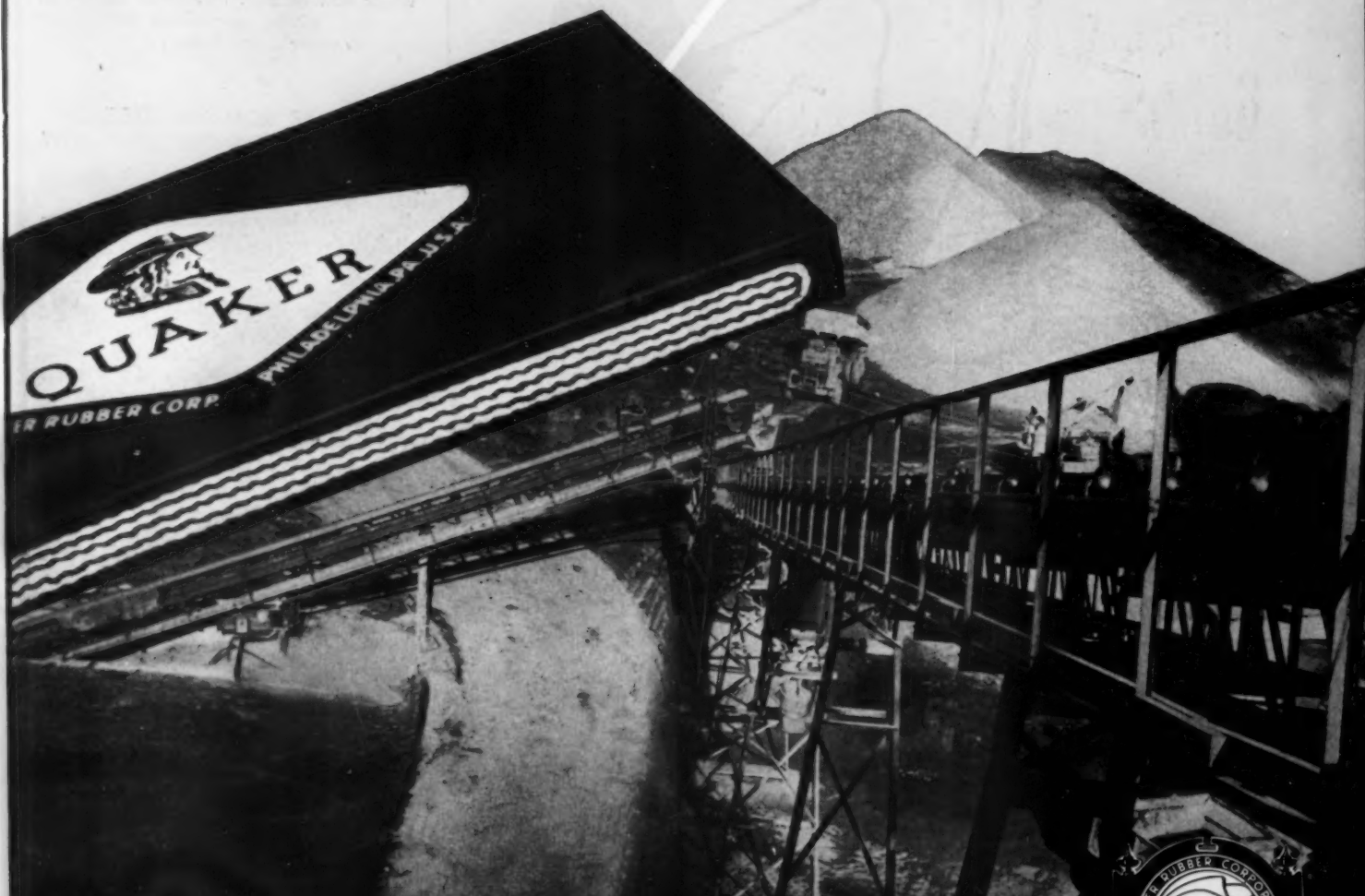
Border to border . . . coast to coast Atlas Conveyor Company, leading producer of stationary and portable conveyors, selects and recommends Quaker Conveyor Belting. Installed on all types of Atlas Conveyors Quaker belts prove their long-lasting "wearability."

Quaker Conveyor Belting is fabricated from prime selected duck with friction covers of scientifically compounded, long-lasting rubber. It is built to resist weather, shock, abrasion and flexing . . . is service-proved to give extra wear and top performance on the toughest jobs.

Whatever your needs for original equipment or replacement maintenance — transmission belting, hose or packings — there's a Quaker product that will provide long service and high production at low cost. For complete data on the Quaker line of Pre-tested Products write for the new General Catalog.

TO MAKE BELTS LAST LONGER . . . GET THIS C M P

Informative folders, booklets and charts available on how you can get more production out of industrial rubber products. No cost or obligation.



QUAKER

RUBBER CORPORATION

DIVISION OF H. K. PORTER COMPANY, INC.



PHILADELPHIA 24, PENNA. BRANCHES IN PRINCIPAL CITIES

PREVENT ACCIDENTS



...use the **RIGHT TOOL**
for the job!



a BILLINGS
will do it
better!

*** VITALLOY® FORGED
COMBINATION
WRENCH**

Ask your **BILLINGS DISTRIBUTOR**
He'll tell you why!

THE BILLINGS & SPENCER CO. HARTFORD 1, CONN. U.S.A.

CYCLONE FURNACE TESTS SEEK BETTER FUEL USE

Tests expected to throw more light on the problem of getting better efficiencies from low grade fuels are being conducted in a new installation at the plant of The Babcock & Wilcox Company, Barberton, Ohio. The tests are being made by burning the fuels in a "cyclone furnace" under commercial conditions.

A cyclone furnace is a new device being manufactured by the company which burns crushed coal and other fuels in a whirling tornado of flames within a cylindrical unit producing high temperatures. Fuel and preheated air are introduced cyclonically at one end of the unit and high temperature gaseous products of combustion are emitted at the other end. Action of the furnace coats the walls of the cyclone with a molten layer of ash into which the fuel is thrown by centrifugal force. Combustible materials burn, giving up heat and non-combustible residue melts and drops into a pit as slag, greatly reducing ash discharge from smoke stacks. A number of these units are in service throughout the nation at the present time.

The cyclone furnace in which the tests are being conducted is a component part of one of the company's new boilers which will be used in regular service at the plant giving operational data under true commercial conditions.

SCRAP IRON AND STEEL INVENTORIES DANGEROUSLY LOW

Inventories of scrap iron and steel at the nation's 200 mills and foundries are dangerously low, and unless scrap supplies are appreciably expanded within the next four months the steel production program faces a serious threat of being crippled. Manly Fleischmann, Administrator of the NPA, warns that without a sufficient supply of scrap steel, which is essential to the production of new steel, a lag in the steel program would affect not only defense and defense-supporting industries, but would limit production of civilian consumer goods such as automobiles, refrigerators and stoves.

The program calls for the recovery this year of at least 36,000,000 tons of iron and steel scrap. An additional 3,000,000 tons of scrap is estimated as necessary to meet the expanded steel production goals of 1952 and reduce the drain on other scarce materials.

NPA officials reported that no mill shutdowns yet have been caused by lack of scrap, but that such shutdowns may occur unless the projected recovery program is successful.

To get the needed scrap, industries are being urged to survey their plants in search of obsolete machinery and such equipment as tools, dies and jigs which no longer are in use and can be turned into scrap.

Railroads are being asked to turn into scrap-channels obsolete engines and those which are beyond repair. Automobile

(Please turn to page 258)

HOW YOU CAN HELP

EASE THE STEEL SHORTAGE...



WRITE A MEMORANDUM to your operating supervisors and foremen . . . tell them the importance of rounding up the scrap and the broken equipment in their departments . . . ask for lists of obsolete and over-age machinery that can be sold at today's high scrap prices—that can help pay for new, modern machinery.

All this scrap will find its way promptly from your scrap dealer back to the mills to produce more much-needed steel . . . each ton of scrap helps make 2 tons of steel. Steel shortages will be greatly eased if you and your operating people start a plant scrap drive today. The memorandum below may help you compose your own . . .

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO



MEMORANDUM

TO: OPERATING DIVISION
FROM: EXECUTIVE DIVISION

RE: SCRAP STEEL

Please organize a group immediately to comb your department for the following scrap iron and steel:

1. Broken parts and equipment not repairable.
2. Idle dies and tools no longer usable.
3. Piles of scrap and clippings awaiting pickup by scrap collector.
4. Obsolete and idle machinery no longer usable economically.

As soon as this material is gathered in one central place, notify the Purchasing Agent. He will then arrange to sell this scrap to a scrap dealer who will start it on its way to the steel mills. Scrap serves two purposes . . . it turns idle and useless material into money for us . . . and it is badly needed by the steel plants to make more steel. I understand that a ton of scrap helps make 2 tons of new steel. We need steel. Please start a plant-wide scrap drive today.

ROUTE TO

If it's Tough and True it's a TRIPLEX Screw



The ten TRIPLEX fasteners illustrated above are in greatest demand. Preference is growing because the name TRIPLEX is synonymous with TOUGHNESS. It's your first choice for heavy-duty work that requires surplus holding power. Write for catalog. The Triplex Screw Company, 5317 Grant Avenue, Cleveland 5, Ohio.

TRIPLEX for TOUGHNESS
CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

(Continued from page 256)

wrecking companies also are urged to remove all saleable parts as quickly as possible and move the remaining scrap into recovery channels.

Public utilities, petroleum industries, coal mines, and local and state governments are being asked to institute programs for scrap steel collections.

Federal Government agencies are making surveys of their buildings, warehouses and equipment in the search for scrap. The U. S. Maritime Commission has appointed a special committee to determine which ships should be scrapped.

In addition to the domestic program, the Government also is taking action to increase the flow of scrap to American mills from other nations, through normal trade channels.

Edward K. Moss, NPA Director of Public Information, stressed the fact that the present drive is not on a house-to-house basis, such as the scrap recovery effort in World War II, but is being concentrated on the dormant heavy scrap in industry. However, he pointed out that old farm equipment or household scrap would be bought readily by scrap dealers.

NEW WESTINGHOUSE BUS DUCT MANUAL

A new 68-page manual describing types of bus duct and accessories available, and presenting application and test data, specifications, information on pricing a typical bus duct installation, and a typical bill of materials, is available from Westinghouse Electric Corporation.

Initial sections in the booklet describe advantages of bus duct for a secondary power distribution system, carrying current from transformers to switchgear—and from there to motors, lighting systems, and other electrical equipment. Subsequent sections tell where bus duct can be used and the specific advantages it offers. The complete Westinghouse line of bus duct and accessories, approved by the Underwriters' Laboratories, is pictured and described. Sketches included show dimensions of two-, three-, and four-wire bus duct, as well as accessories.

The booklet describes the three types of overload protective units available for use with plug-in bus duct: the AB circuit breaker; type A safety switch; and, the cover-operated fusible switch. Ratings and dimensions of these units are included.

A technical section in the book presents data, tables, and formulas useful in applying bus duct correctly, and in selecting power takeoff. Voltage drop curves for low-impedance bus duct also are presented. The technical section concludes with test data on plug-in bus duct and short-circuit stresses. Two types of fault conditions were used—the bolted fault and the arcing fault. Similar tests were applied to low-impedance bus duct.

For a copy of this booklet, B-4272A, please write on company letterhead to Westinghouse Electric Corporation, Box 2099, Pittsburgh 30, Pennsylvania.

(Please turn to page 260)

End Mills that Save Down-Time

Precision-made end mills that meet the highest standards of cutter design have advantages especially important in fulfilling today's high production requirements. They cut faster, more freely, and with less power. Their greater wearing qualities enable them to turn out more work between sharpenings — reduce machine down-time.

Brown & Sharpe End Mills are made under exacting quality control, from start to finish. In both steel formula and heat treatment, they are closely held to rigid specifications. Careful machining maintains consistent adherence to design standards.

To assure maximum productivity from your milling machines, specify end mills and other cutters from the complete Brown & Sharpe line. Write for Catalog.

Brown & Sharpe Mfg. Co., Providence 1, R. I., U.S.A.

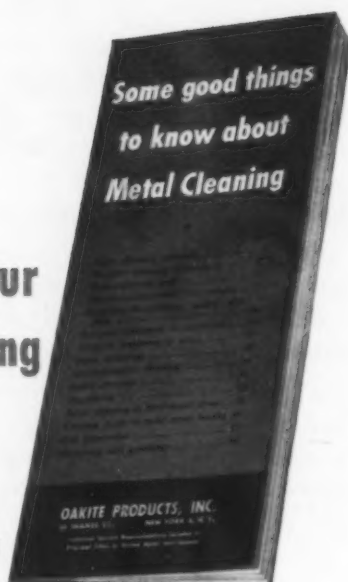


WE URGE BUYING THROUGH THE DISTRIBUTOR

Brown & Sharpe



Which of your
metal-cleaning
jobs would
you like
to improve?



Listed below are some of the operations discussed in Oakite's new 44-page handsomely illustrated booklet on Metal Cleaning. Please check the list. Then let us show you how Oakite materials and methods can give you better production with greater economy.

OAKITE PRODUCTS, INC.
34 Thames St., New York 6, N. Y.

Tell me (without obligation on my part) about Oakite methods and materials for the following jobs:

- ☐ Tank cleaning
- ☐ Machine cleaning
- ☐ Electrocleaning
- ☐ Pickling
- ☐ Pre-paint treatment
- ☐ Paint stripping
- ☐ Steam-detergent cleaning
- ☐ Barrel cleaning
- ☐ Burnishing
- ☐ Rust prevention
- ☐ Send me a FREE copy of your booklet "Some good things to know about Metal Cleaning"

NAME.....
COMPANY.....
ADDRESS.....

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

G. E. ANNOUNCES NEW TRI-CLAD VERTICAL MOTORS

New vertical, solid-shaft capacitor motors, featuring standardized mounting dimensions and quiet operation, have been announced by General Electric's Small and Medium Motor Divisions.

An addition to the company's Tri-Clad integral-horsepower, single-phase, capacitor motor line, the new motors are available in ratings from ¾ to 5 hp.

Principal application of the vertical motors is on jet pumps and other assemblies for supplying water to homes and farms, and for irrigation. Normally furnished as part of the complete pumps, they are suitable for outdoor operation where severe climatic conditions are not encountered.



Tri-Clad construction provides the motors with protection from physical damage, electrical breakdown, and operating wear and tear. Dimensions of the Type P base, machined to NEMA standards, are the same as those of polyphase motors of the same size, permitting interchangeability without modification of the mounting. The capacitor motors with squirrel-cage rotors—no brushes or commutators—provide quiet operation without causing radio interference.

As accessory equipment for use with the new motors in ratings of 2 hp and less, an automatic thermal protective device is offered which disconnects the motor from the line when the limiting temperature is reached because of overload, high ambient temperature, inability to start, etc.

1 1 1

IMWI LAUNCHES MINERAL WOOL CERTIFICATION PROGRAM

The Industrial Mineral Wool Institute, 441 Lexington Ave., New York, announces the activation July 1 of an industry-wide certification program designed to assure standard quality and protect industrial users of mineral wool products. Each carton or section of insulation manufactured by the Institute's member companies will carry a label certifying its quality.

(Please turn to page 262)



Mono-Cushions **cut the cost of bumps**

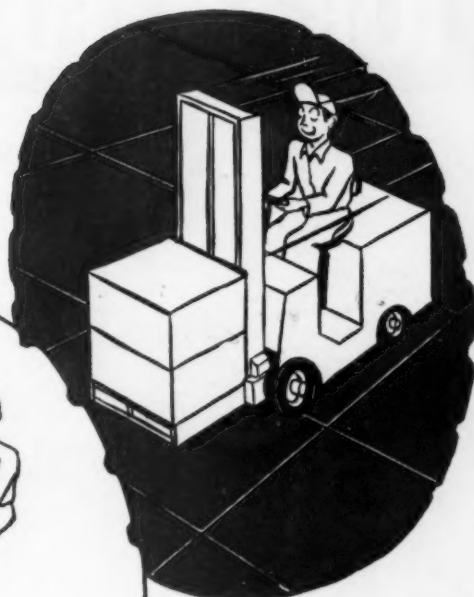


CUSHION THE FLOOR

Big, burly Mono-Cushions soak up jolts and jars both ways, protect floors from the pounding a heavily laden truck can dish out.

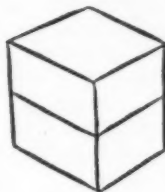
CUSHION THE LOAD

Mono-Cushions are saving hundreds of users plenty of money by reducing load breakage, giving both load and driver a smooth ride.

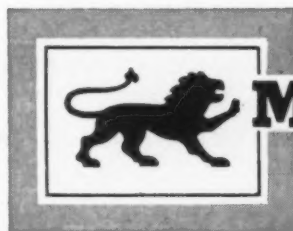


CUSHION THE TRUCK

Mono-Cushions can reduce truck maintenance as much as 40 per cent, because they absorb more shock and shock load than any other type of industrial tire, size for size.



YOUR BEST SOURCE FOR TIRES is the manufacturer of your equipment. He can supply you, through his service branches, with the type of Monarch Tire engineered for your equipment.



**THE
MONARCH
RUBBER COMPANY**
100 LINCOLN PARK
HARTVILLE, OHIO

**SPECIALISTS IN INDUSTRIAL SOLID TIRES
AND MOLDED MECHANICAL RUBBER GOODS**



KENNEDY Fig. 27, Bronze Gate Valve, 125 lbs. steam, 200 lbs. WOG, non-shock

TO SAVE TIME AND TROUBLE, the Fig. 27 is *job-fitted* for easier installation, too. Wide, heavy pipe-end hexes have generous chamfer and precision threading . . . help you make tight connections quickly and easily.

FOR BEST RESULTS and real economy, standardize on KENNEDY Bronze Valves, and the complete line of KENNEDY Iron Valves, Malleable, Cast-Iron and Bronze Pipe Fittings.

WRITE FOR CIRCULAR 102 . . . BUY FROM YOUR LOCAL DISTRIBUTOR



THE

KENNEDY

VALVE MFG. CO. • ELMIRA, N.Y.

VALVES • PIPE FITTINGS • FIRE HYDRANTS

KENNEDY

bronze gate valves...

for low-cost maintenance

TO ASSURE DEPENDABLE OPERATION with minimum maintenance, the complete KENNEDY Line is *job-fitted* . . . every valve specially designed and engineered for the job it has to do.

THE SIMPLE, STURDY DESIGN of the rugged KENNEDY Fig. 27 Bronze Gate Valve, for example, eliminates the small, quick-wearing parts that can cause frequent repair expenses.

EXTRA TIGHTNESS, without undue wear on the packing, is assured by an unusually deep stuffing box. Stripping of the stem and disc threads is practically impossible. Ribs cast on inside of valve body fit into channels in disc to maintain straight-line operation of all moving parts.

THE STUFFING BOX is provided with gland, and the valve can be repacked under pressure when wide open.

SCREWED BONNET AND WEDGE DISC are standard on the Fig. 27 in sizes from 1/4" to 3". Larger sizes are constructed with bolted bonnets and cam-type double discs with parallel seats. Working pressures 1/4" thru 3": 125 lbs. steam, 200 lbs. WOG, non-shock. 3 1/2" thru 6": 100 lbs. steam, 150 WOG, non-shock.

(Continued from page 260)

tifying that its properties exceed minimum requirements prescribed in two commercial standards issued by the National Bureau of Standards (U. S. Department of Commerce). As constant evidence of quality, the label will protect the industrial consumer against sub-standard insulations fabricated in the field.

The Institute includes 16 leading manufacturers of mineral wool insulation, with plants in all sections of this country and Canada.

In the new program, loose, granulated, felt, blanket, industrial batt, block or board, blanket-type and molded-type pipe insulation and insulating cement are certified under Commercial Standard CS 117-49, "Mineral Wool Insulation for Heated Industrial Equipment". Loose, granulated, felt, industrial batt and board or block forms may also be certified under Commercial Standard CS105-48, "Mineral Wool Insulation For Low Temperatures".

Each Standard also covers definitions, materials, thickness and temperature recommendations, application techniques and other appropriate subjects helpful to the buyer, specifier and applier of industrial insulation. A given form of insulation is certified under the Standard reflecting the high- or low-temperature end use.

Initial test requirements, supplemented by other provisions, are designed to insure that, after license to certify has been granted, the insulation will continue to conform to the standards of quality. Methods of test for the various properties described in the product standards are given in Commercial Standard CS 131-46, "Industrial Mineral Wool Products, All Types-Testing and Reporting".

WATER COOLING EQUIPMENT FOR RE-USE OF WATER VITAL

With water usage in this country double what it was a decade ago, selection of economical water cooling equipment necessary for the industrial re-use of water, has become of vital importance as power demands increase and industries expand their water needs, The American Society of Mechanical Engineers heard at its recent meeting.

Recent headlines of "water crises" in New York City and elsewhere have brought to public attention basic water shortages that engineers have predicted for years, Howard E. Degler, technical director of the Marley Company, Inc., Kansas City, Kan., told the ASME. In general, he said, water shortage has nothing to do with drought but can be attributed to over-population in cities and increased industrial and agricultural requirements.

This country's requirements are 100 billion gallons per day for everything from drinking and irrigation to making steel and watering the lawn; that is 700 gallons per day per person, he declared.

Mr. Degler said industrial requirements

(Please turn to page 264)



Why pussyfoot in picking tubing?



Bundyweld Tubing, double-walled from a single strip. Exclusive, patented beveled edge affords smoother joint, absence of bead, less chance for any leakage.

No need to get yourself out on a catwalk when it comes to choosing a small-diameter tubing for your product.

Bundyweld, the multiple-wall type of Bundy® tubing, is top choice across the boards for applications ranging from radiant heating grids and automotive pres-

sure lines to cartridges of ball-point pens. The only tubing that's double-walled from a single strip, Bundyweld is made by the world's largest producer of small-diameter tubing.

For technical help or information, contact Bundy Tubing Company today.

Bundy Tubing Company

DETROIT 14, MICHIGAN

World's largest producer of small-diameter tubing
AFFILIATED PLANTS IN ENGLAND, FRANCE AND GERMANY

140-A Series.
Equipped with Roller
Bearing Semi-Steel
Wheels.

**for
heavy loads
hard service
it's Best to Use**

Bond®

**built-for-the-job
40-A SERIES
STRUCTURAL STEEL
CASTERS**



1340-A Series
Equipped with Roller Bear-
ing Solid Rubber Wheels.



1540-A Series
Equipped with Roller Bear-
ing Vulcanized-on Soft
Rubber Tread Wheels.

You can depend on Bond 40-A Series Casters when your service needs require the strength and durability of all-steel construction coupled with easy maneuverability for perfect handling of peak loads.

The 40-A Series have double ball races. The upper race absorbs all side shock eliminating strain on king bolt; the lower race absorbs the vertical load created by the long throw of the caster. These casters are pressure lubricated for frictionless operation—they stand up best, keep costs way down.

Write today for your copy of the Bond Catalog K-38 which gives complete information on the full line of Bond Casters including the popular structural steel 40-A Series.

BOND FOUNDRY & MACHINE CO.
Manheim, Pennsylvania

(Continued from page 262)

are frequently in excess of 300 pounds of water per pound of finished product. Constantly increasing power demands, expanding industries and the introduction of new processes are making heavy new demands on the hard-pressed water resources of the nation. He named as large industrial users, power plants, manufacturers of paper, petroleum products, rayon, linen, textiles, lactose, sugar, explosives, hydrogen, rubber, steel.

Hydrogen and synthetic rubber each require 2,500 pounds of water per pound of finished product, he revealed. Wool requires 500 pounds of water per pound of finished product, lactose 800, butadiene 1200, rayon 800, gun powder 400 and steel 250.

Once-Through Wasteful

Once-through use of cooling water in industry is wasteful, Mr. Degler declared, adding that in many applications the same water can be used for additional service or continuous re-use. He outlined the principles of evaporative cooling and described the operation of mechanical draft cooling towers and air-cooled finned tube exchangers. The towers, he said, require less than one percent evaporation of the water circulated to economically cool the water. The air-cooled exchangers are being increasingly used where high-level heat removal is required where water is scarce, expensive or badly polluted.

♦ ♦ ♦

ELECTRONIC DRIVE BOOSTS PAPER PRODUCTION 25 PER CENT

A 25 per cent increase in paper production has resulted from the use of a General Electric Thy-mo-trol drive on a winding reel at the Lee Paper Company, Vicksburg, Mich.

According to R. L. Hussey, the company's chief engineer, Lee's former output on this unit of eight paper rolls a day has been increased to at least ten since the installation of the electronic control. In addition, he said, the reels are neater, more uniform, and more compact.

Paper tension must remain constant as it is wound on a roll after being treated. Since the speed of the paper is constant as it comes from a coating machine, the speed of the roll on which it is to be wound must be reduced as the roll becomes larger. The problem has been to reduce the speed smoothly, by just the correct amount, and still maintain unvarying tension on the paper.

The process was formerly done manually, Mr. Hussey reported, and the operators had to make frequent adjustments of speed and tension by mere guess work. The Thy-mo-trol drive now performs the operation automatically, electronically.

Run eight hours a day, the winding machine has been equipped with the G-E control for two years. The electronic tubes in the unit have never been replaced.

(Please turn to page 266)

At Accurate **attention to all the details**

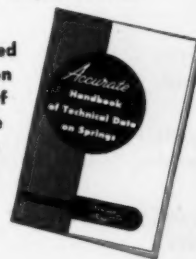
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Write for your copy of the new revised Accurate Handbook of Technical Data on Springs. This booklet has been out of print for some time and if you have previously requested a copy and have not received it, we would appreciate your asking again.



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When the chips were down in World War II, MYSTIK Cloth Tapes supplied 65% of the total needs of industry and the armed forces.

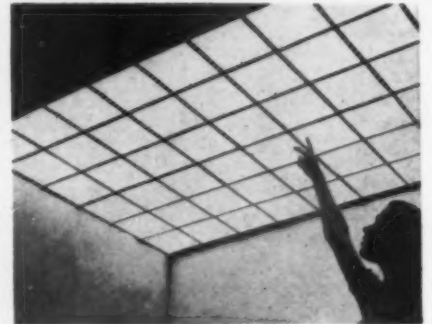
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MINUS BULBS OR TUBES, NEW LAMP CONSISTS OF THIN FLAT SHEET OF GLOWING GLASS

The Sylvania Electric Co., recently introduced a new and revolutionary method of producing light, styled Panelite, the technical term for which is electro-luminescence. Panelite is entirely different from either incandescent or fluorescent light, employing thin flat sheets of glowing glass instead of bulbs or tubes. It operates at extremely low cost on conventional a.c. current, and its inventors claim that it will have an expected life of one to five years.



Panelite luminous ceiling; brightness $2\frac{1}{2}$ foot-lamberts, throwing $1\frac{1}{2}$ foot-candles on model. Inexpensive transformer brings current up to 500 volts, but the entire ceiling uses less current than a 75 watt b.l.b.

The new type of lamp consists of a special sheet of conductive glass on which is placed a "phosphor-dielectric" coating, and a layer of vaporized aluminum. These two coatings add less than a hundredth of an inch to the glass itself. Wires are connected to the edges of the sheet to pick up current directly from 110-volt, 60-cycle current. The brightness of the sheets is roughly comparable with bright moonlight on a white object.



Commercial clock with Panelite face.

For greater brightness a small inexpensive transformer is introduced in the circuit to bring the voltage up to 400-500 volts. For a panel a foot or two square, the transformer would be no larger than a cigarette package. The transformer multiplies the light output by twenty. It is said to be ample for low level illumination of restaurants, elevators, theatre aisles, and other decorative and architectural applications.

(Please turn to page 269)

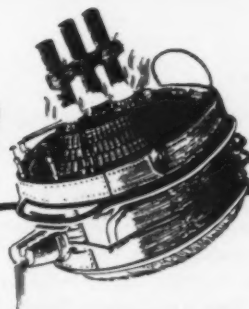


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Hex Nut



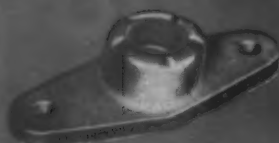
Spline Nut



Clinch Nut



High Tensile Nut



Anchor Nut



Floating Basket Nut



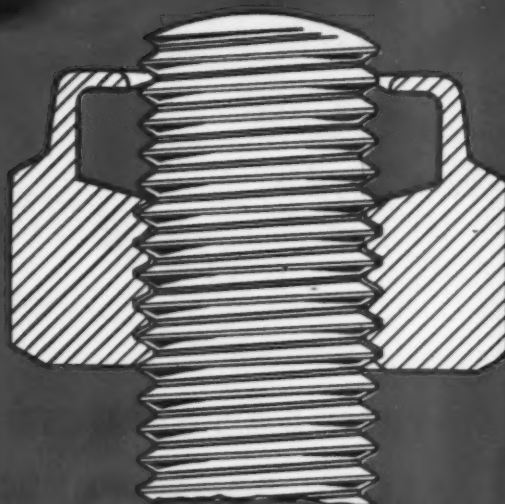
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Identifies self-locking Elastic Stop Nuts. With the regular fiber locking insert they meet AN-N-5 re-useability requirements. With the new nylon locking insert they surpass these specifications—provide more than 200 re-use cycles.

HOLDS FIRM

... against vibration. The Red Elastic Collar—an integral part of the nut—grips bolt threads, because its inside diameter is smaller than bolt diameter. Permits accurate bolt loading—maintains accurate adjustments.



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FOR ARMY AND NAVY AIRCRAFT, ORDNANCE AND SIGNAL CORPS EQUIPMENT

—Free AN-ESNA Conversion Chart—

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ES/nail

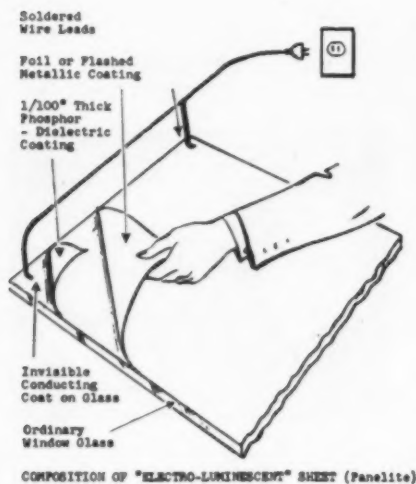


ELASTIC STOP NUTS

(Continued from page 266)

Sheets of the glowing material can be made in almost any size to provide luminous ceilings, walls, tables, clock faces, stair risers, switch-plates, and signs. So economical is the current consumption of the new lamp that many of the applications not requiring a transformer, such as wall plate switches, clock faces and safety lights can be permanently connected to run 24 hours a day. Most uses of this sort would be rated at about 1/25th of a watt. Even with the use of transformers to build up brightness, requiring more power, a 4' x 6' panel consumes less energy than a 25 watt light bulb.

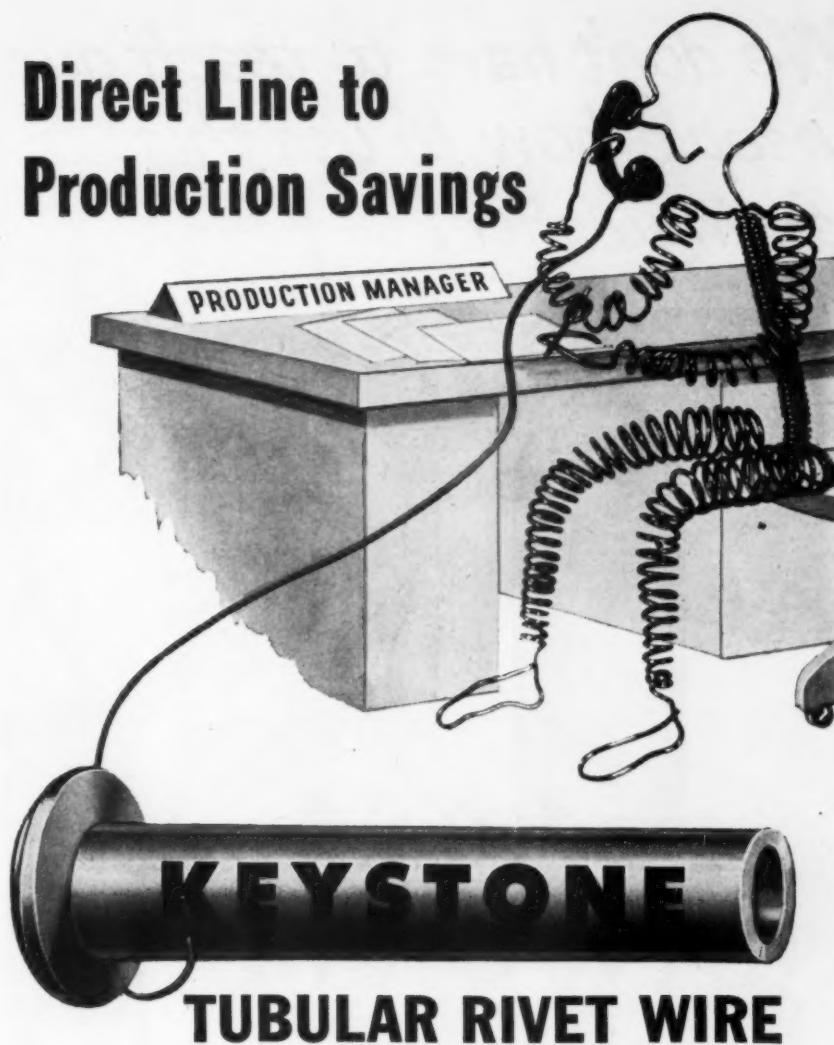
The panels will be made in a variety of colors including white, a golden yellow and a light blue. As of now, a brilliant green color is the only one commercially available. The green "panelite" lamps have a brightness of about 0.1 foot-lambert at 120 volts 60 cycles, and from 3 to 5 foot-lamberts at 600 volts. At 400 cycles brightness levels several times as high may be obtained. The efficiency of the lamps is a few lumens per watt. A large part of the energy consumed is taken up by dielectric losses which do not contribute to the light emitted.



Plastics may be used instead of glass, but the plastic must be transparent or at least translucent and carry an electrically conducting surface. Since there are no filaments to burn out, the life of the lamps should be indefinite. The end of life will coincide with the period when lamp brightness has decreased to a level which is inadequate, rather than the usual type of abrupt termination due to filament or cathode failure. If the glass should be cracked between the two electrical contacts, the lamp will fail to light except in the rare cases when the crack does not completely separate the two parts. If the break is such that both contacts are on the same side of the crack, that side will light in a normal manner. The lamp can be dimmed, following dimming control in a manner quite similar to that of incandescent lamps.

(Please turn to page 270)

Direct Line to Production Savings



The special techniques and processing methods developed by Keystone have produced a tubular rivet wire with *exceptional* forming qualities for both extruded and drilled rivets.

The wire for drilled tubular rivets has the proper hardness for longer drill life. The wire for extruded rivets has uniform metal flow qualities required in extrusion headers. Both types have exactly the right ductility for cold heading and excellent roll crimping.



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Houseclean your plant for all worn out and obsolete equipment. Sell it to your local scrap dealer now in order to keep America's steel production expanding.



We don't have to 'teach' our people how to use this extinguisher!



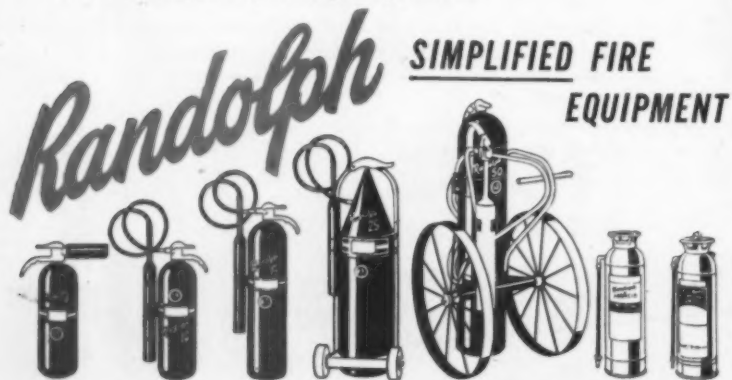
IT'S A RANDOLPH!

One glance tells you just how the Randolph operates—no instructions, no explanations necessary! That's why *anybody* can get a Randolph into action fast! No valves to turn, no nozzles to adjust; just point and press your thumb and Randolph's cloud of snowy CO₂ kills fire instantly!

Non-damaging Randolph CO₂ evaporates without a trace, is non-toxic, won't conduct electricity, deteriorate or freeze. And *all* Randolph Models are Underwriters' Approved.

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Learn how Randolph gives your plant panic-proof, split-second protection against flammable liquid, electrical and other hard-to-handle fires! Write Randolph Laboratories, Inc., 1 E. Kinzie St., Chicago 11, Illinois.



SIMPLIFIED FIRE EQUIPMENT

HERCULES POWDER ISSUES BOOKLET ON LACQUER

The reasons for the ready availability of lacquer today, and for the foreseeable future, are given in a new leaflet "Some Facts You Should Know About Lacquer," published by Hercules Powder Company, Wilmington, Delaware.

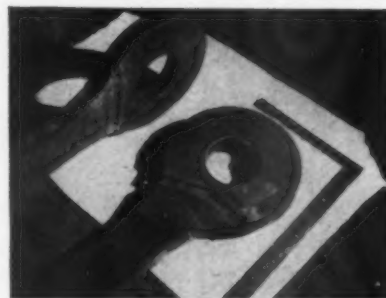
The leaflet points out that of all the production-line finishes in use today nitrocellulose lacquer is the least vulnerable to shortages. Basically the reasons for the availability of lacquer are: ample production capacity for both nitrocellulose and lacquers to take care of military and essential civilian demands; lacquer formulations are so flexible that lacquer is not tied to any one critical material, or to any group of materials.

The use of the hot-spray process is also recommended, wherever possible, in order to conserve solvents as well as save production manhours.

Modern lacquer formulations, hot or cold, will be considered for military applications even where synthetic enamels are now specified because of the better availability of lacquers and the possible advantages obtainable by hot-spray, according to the leaflet, which also lists a number of military uses for which lacquer is now specified.

1 1 1

HIGH STRENGTH WELDS IN HIGH CARBON STEEL



The extractor arms of a floating derrick shown in accompanying photograph are made of 2" 4140 plate. They broke while extracting 45' steel piling. To put them back in service, extremely high strength welds had to be made in this high carbon material.

A successful repair was made by using a low-hydrogen type of electrode, LH 70, manufactured by the Lincoln Electric Company of Cleveland, O. The cracks were first beveled with a cutting torch and six passes made with the electrode on each side. After welding the arms were stress relieved.

1 1 1

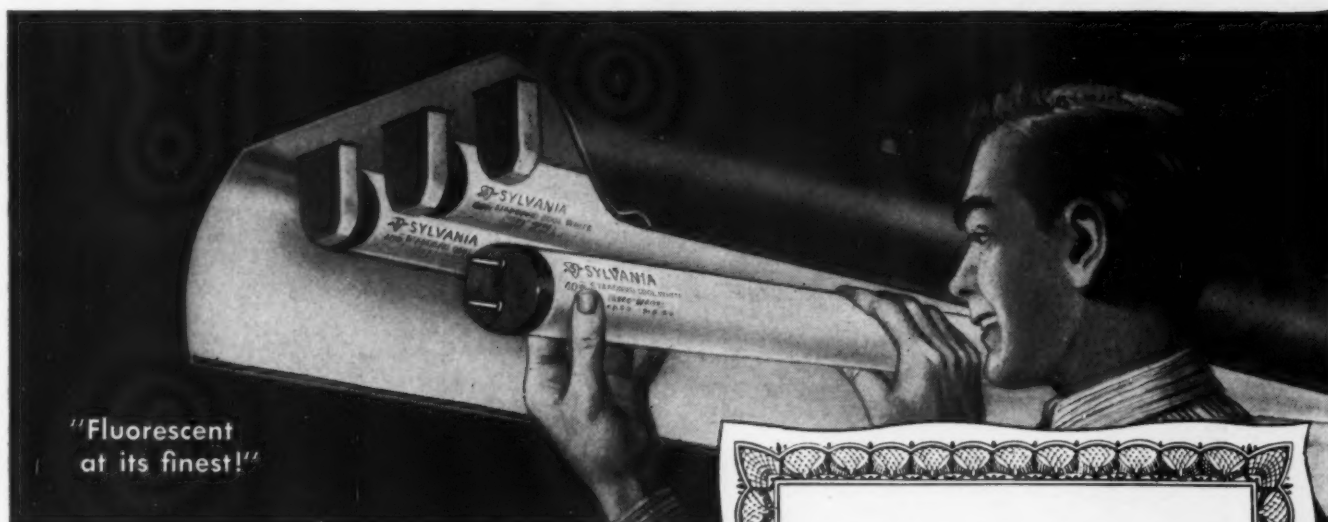
SAFETY ELECTRIFICATION FOR OVERHEAD CRANES

The Cleveland Tramrail Division of The Cleveland Crane & Engineering Co., Wickliffe, Ohio, announce a new type of electrification for overhead cranes and tramrail systems especially designed to provide maximum safety. The develop-

(Please turn to page 272)

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It's a fact, Sylvania Fluorescent Tubes give *more light* for a longer time... maintain their uniform appearance, too.

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So you be the judge. Try 24 Sylvania Fluorescent Tubes of any popular type... Ask for your "certificate of assurance." If they don't out-perform... out-last, maintain color and brightness longer than any other brand, send them back with the certificate to your Sylvania supplier and your money will be refunded.

For maximum dependability in any lighting or electrical work, be sure to call the Electrical Contractor who displays this emblem.



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AUGUST, 1951

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271

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 am I glad we use
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 for Heavy Lifting Jobs!



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**Because they're easy to Operate
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"The House that Jacks Built"



(Continued from page 270)

ment was planned and carried out in anticipation of a possible ruling in the near future by the National Electric Code, making it mandatory to have adequate protection of electrification on overhead materials handling equipment.

The new electrification, known as Cleveland Tramrail Saf-Powr-Bar, consists of inverted U-shaped conductor bars inside of which operate sliding current collector shoes. This electrification arrangement may be applied to all new Cleveland Tramrail systems, as well as replacement on open-bar electrification. It may also be installed on many hand-propelled systems where motor-powered hoists, carriers, or cranes are now desirable.

Safety is the big feature of the development, as the Saf-Powr-Bar prevents accidental contact with an electrified conductor bar. Shocks and more serious injuries from contact with power bars are prevented because the bar is enclosed with an insulating plastic covering.

**LABEL PASTERS HAVE MULTIPLE
 USE IN DISTILLER'S PLANTS**



Small electric motor driven Potdevin label pasters are put to a number of uses in all bottling houses of the National Distillers Products Corporation, Peoria, Ill. A battery of label pasters is placed on tables on both sides of a conveyor where operators apply internal revenue strip stamps to the filled bottles as they are carried from the automatic fillers and front and back labeling machines.

In addition, where small orders are being bottled, the label pasting machines are used in the application of front and back labels. Another function National puts the machines to is the affixing of state code labels to cases. These code labels are required where sales are made to state liquor outlets. The code identifies the contents as to brand or size as well as an aid to inventory control. They also serve as a convenient means for ordering National's varied line of brands.

**LESSONS IN ARC WELDING
 NEW BOOK BY LINCOLN ELECTRIC**

"New Lessons in Arc Welding" is a new 320 page book based on lessons and instruction given at the Lincoln Arc Welding School.

The lessons are practical, not theoretical, and cover fully basic fundamentals of arc welding as well as more advanced welding in alloys, sheet metal and pipe. The basic 32 lessons cover welding mild

(Please turn to page 274)



A Georgia-Pacific "new dimension" in plywood

WE PUT IT THROUGH A WITCH'S BREW...

Now, it's up to you. Scientific torture tests confirm glowing on-the-job reports that GPX has a place in your future. Amazingly tough, satin-smooth, armor-hard, Georgia-Pacific's GPX plastic-faced plywood turns in performances that put most other materials to shame.

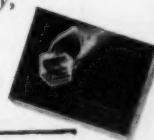
Boiled in water four hours, dried, and boiled again . . . immersed in a hydrochloric acid solution . . . subjected to sub-zero cold . . . scratched a hundred thousand times by a razor's edge . . . subjected to molds, fungi, termites, and marine borers . . . through all these tests and many more, GPX comes through unscathed. Yet, in spite of GPX's rugged qualities, it is easy to fabricate.

GPX, a "new dimension" product of Georgia-Pacific, is blazing new trails in industry and construction. In railway cars, truck trailers, foundry matchplates, concrete forms, counter tops, boats, and in countless other applications,

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TEAM



TO SAVE TIME ON YOUR PRODUCTION LINES

Allen standards of accurate manufacturing, finish and inspection result in screws and keys that speed assembly and add hours of productivity to every day.

YOU CAN DEPEND ON ALLEN O HEAD SCREWS



(Continued from page 272)

steel in all positions and 29 advanced lessons cover other welding applications. Practice materials, exercises, questions and answers are given for each lesson.

Practical information contained in a 163 page welding application section will help welding operators advance in knowledge and skill after fundamentals have been mastered. Explained are: (a) latest welding procedures for faster and lowest cost welding; (b) automatic and semi-automatic hidden arc welding procedures; (c) how metals are made and how to identify them; (d) how to select correct welding joints; (e) how to make common machine parts to use welding instead of casting.

The 6" x 9" book is profusely illustrated with pictures and drawings, printed on fine paper and bound in simulated gold embossed leather. Price, \$1.00 in U. S. A.; \$1.50 elsewhere.



TAMING THE TITAN TITANIUM OFFERS MANY ADVANTAGES

Chemical and metallurgical engineers in laboratories all over the country are grappling with the intriguing and exasperating problems involved in the use of titanium as an engineering metal, states *Research Review*, published by the Research Division, College of Engineering, New York University. This new material, states the Research Division, was actually discovered as a chemical element in the year that George Washington was inaugurated first president of the United States, but its peculiar characteristics—especially its reluctance to separate in pure form from its ores—have prevented it, until lately, from being exploited.

Now titanium's days as a laboratory curiosity are over. Military engineers see in its combination of strength-with-lightness an opportunity to improve substantially the mobility and transportability of combat equipment. Aeronautical engineers anticipate that, when all feasible applications of titanium alloys are made, the weight of heavy planes can be reduced by from one to five tons. The Navy is interested in its exceptional resistance to corrosion by marine atmosphere and sea water; while its immunity to most other corrosives makes it important to the chemical industry. Many other industries expect to substitute it for aluminum and alloy steels in a variety of applications.

Titanium is difficult and expensive to produce and process. However, it offers so many advantages that it is expected that ways will be found to make it a major engineering metal in the near future. The Army alone estimates that it will use, for research and development in the next year-and-a-half to two years, 500,000 pounds—almost five times as much as was produced in this country in 1950.

Most current research effort is aimed at determining the specific properties of titanium alloys, which promise to be greatly superior in many respects to the

(Please turn to page 276)

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on the scales that weigh our worthiness to continue free. *So keep the scrap moving, back to the mills. Get it back to work, as fast as you can.* This is no time for idleness either of men or metals. And here at Bristol, we hope to keep just as busy as this, shoveling in the scrap that goes to produce more and more Bristol Brass sheet, rod and wire. The Bristol Brass Corporation, since 1850 in Bristol, Conn. Offices or warehouses in Boston, Chicago, Cleveland, Dayton, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

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America's blue ribbon companies prefer **Blue Ribbon** tape



Blouses and sweaters are being packed in this Glenwear shipping room scene. The gummed sealing tape used is Blue Ribbon Superstandard.



"We effected a 15% saving"

"One of your representatives called on us to see if we were satisfied with printed Blue Ribbon gummed tape. You bet we like Blue Ribbon!! Changing over to Blue Ribbon tape was one of the best decisions we've ever made. Immediately after changing over to Blue Ribbon we effected a 15% saving on our gummed tape usage.



"Blue Ribbon tape requires no time-wasting rubbing. It seals with one sweep of the packer's hands. Less tape is used, since no extra reinforcement is required and every roll is usable right down to the blue core.

"The shipping room savings we have effected through the use of Blue Ribbon tape, together with its low-cost advertising message (printed tape), has added dollars to our net worth."

—Glenwear, Inc.

Blue Ribbon tape is *Supple-ized**... an exclusive process for the treatment of the adhesive and paper to make Blue Ribbon tape more flexible... easier and faster to handle...

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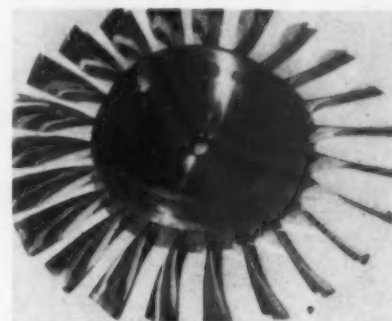
(Continued from page 274)

"commercially pure" metal (more than 99.5 per cent titanium). Under Government auspices, many laboratories are investigating the alloys of this fascinating metal. The Research Division is taking a prominent part in this research.

Duckling to Swan

Titanium is a silvery-white metal which, when touched with a grinding wheel, shows white traces ending in brilliant white bursts. For many years it was noted chiefly for its nuisance value. It is a minor constituent in most ore deposits; and it was from research directed toward finding a practical way to eliminate this "impurity" that discovery of the importance of its oxides as a pigment resulted.

The substance is the whitest white known. It has an extremely high refractive index—higher even than that of diamonds—and titanium "gems" are now sold as semi-precious stones. The high refractive index gives it exceptional surface-covering and hiding properties. It is widely used in paint, enamel, paper, rubber, nylon, and other materials.



Gas turbine compressor wheel made of a titanium alloy. Its immunity to most kinds of corrosion makes titanium a promising possibility for applications like this.

As a metal it falls somewhere between aluminum and alloy steels in many respects. Pure titanium is as weak and soft as copper, but titanium-base alloys are stronger than aluminum alloys, and much lighter and more elastic than stainless steel. Some titanium alloys already evolved are superior to all common engineering metals and alloys in strength-weight ratio—and this with excellent ductility all the way down to room temperatures.

One of titanium's most important properties is its high impact strength, which is greater than that of aluminum and probably, in alloyed forms, will attain values higher than those of the best alloy steels. A conservative prediction is an ultimate strength of over 200,000 pounds per square inch for titanium alloys. Its fatigue resistance, too, is high—certainly better than that of aluminum, and, in some alloys, better than that of steel. Indications are that its immunity to many kinds of corrosion will make it superior to any other metal in a number of chemical process applications.

To offset these advantages, titanium exhibits some stubborn and disconcerting characteristics. Paramount among these

(Please turn to page 278)

ELECTRICAL INSULATION

A
High-Powered
Plastics Story!

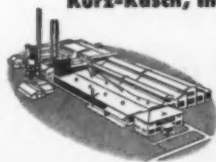


VERSATILITY—that's the theme of the Kurz-Kasch plastics story in the electronic field. Parts like those above—*millions* of them—are examples of Kurz-Kasch mass-production moulding of all types of thermosetting compounds during war and in peacetime.

They measure up to exacting dimensions—pass underwriter requirements—are produced by the millions from moulds made for long productivity. They exemplify the sound and economical moulding methods we've helped to pioneer for the use of our country's leading electrical manufacturers.

That's a "nutshell" story of what Kurz-Kasch has been able to do in the electrical field alone. Our entire output, of course, goes further—to a complete cross-section of American industry. Maybe we can help *you*. You can find out by telephone.

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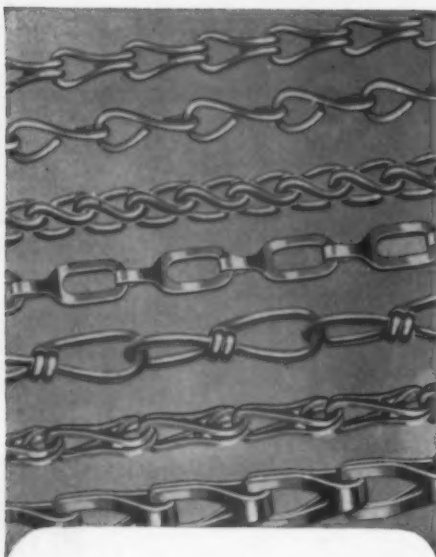


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Top-quality chains made by Hodell meet any industrial need, and conform to Government specifications. Types available include: *Jack, Sash, Safety, Ladder, Sprocket, Pump, Liberty Machine, Proof Coil, Liberty Coil, Passing Link, Samson, Flat Link, Register.* Hodell can also make your special chain assemblies. Send us your specifications, or write for a copy of the Hodell Industrial Chain Catalog, giving full information on the complete Hodell line.

HODELL CHAIN COMPANY

Cleveland 3, Ohio

Div. of The National Screw & Mfg. Co.



(Continued from page 276)

is its excessive reactivity. When in a molten state, it readily absorbs or combines with all the chemically active gases, and such combinations are usually irreversible. Moreover, trace elements of these gases alter the physical properties drastically, and cause excessive embrittlement.

Molten titanium also reacts with all known refractory materials, such as alumina, magnesia, silica, and carbonaceous materials. Melting furnaces are thus likely to be dissolved and absorbed into the titanium as contaminants.

While titanium's melting point is extremely high for a light metal (3150 deg. F.), its tendency to embrittlement at temperatures over 1000 deg. F. will probably limit its operating area to the range between 400 and 800 deg. F.

In spite of the avidity with which titanium welds with other substances, an entirely satisfactory method of welding it to dissimilar metals has not yet been found. However, future research may be expected to eliminate this problem.

These difficulties have combined with the high unit cost of the metal to retard widespread use of titanium.

Multiple approach

The Research Division is tackling the problems involved in the development of titanium as an engineering material from a number of different approaches. As a necessary preliminary to exact determination of the characteristics of the alloy system, the Division has specialized in the preparation of contamination-free laboratory melts, achieved through the use of a multiple hearth cold-electrode arc-melting furnace.

With these carefully controlled melts, the Division is investigating the properties of alloys of titanium and the interstitially dissolving elements: carbon, nitrogen, oxygen, and boron. These alloy systems are of crucial importance in titanium processing, because they include the atmospheric elements with which titanium reacts so easily and often undesirably.

In addition, the Division is developing a phase diagram for the titanium-nickel alloy system. Nickel lowers the melting point of titanium considerably. This may be an exploitable characteristic in finding methods of joining titanium.

Among the "ternary" (or three element) alloys, the Division is studying alloys of titanium-chromium-aluminum; titanium-chromium-nitrogen; titanium-chromium-carbon; titanium-manganese-nitrogen; titanium-manganese-carbon; titanium-nitrogen-carbon; titanium-carbon-oxygen; and titanium-oxygen-nitrogen.

As an aid in the study of titanium, the Division has developed and perfected a method for electrolytic polishing of titanium—a substantial improvement in the metallography of the element.

To throw light upon just what happens when titanium and manganese combine, the Division is making a study of the transformation mechanism. It is also seeking to find methods of controlling the grain size of commercially pure titanium.

(Please turn to page 280)

Compact
Complete



Yes, the CONOVER-MAST PURCHASING DIRECTORY is compiled especially for the industrial buyer—only listings and product facts on the machinery, parts, supplies, and materials needed by industry. All nonindustrial listings and advertisements are rigidly excluded—that's why it's so compact, easy to keep handy and use, yet complete. Besides, it has 35 pages of general information and tables for the buyer which he will not find in other directories.

Use the CONOVER-MAST PURCHASING DIRECTORY—you'll soon find that the complete cross references make it the easiest and quickest way to locate the suppliers of any item you buy. The more you use it, the better you'll like it.

The Most Convenient Industrial
Buyers' Guide for Production, Purchasing, and Engineering Executives

**Conover-Mast
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737 North Michigan Ave., Chicago 11, Ill.



NO "LUNG SPOTS"
for Houston's Washburn Tunnel

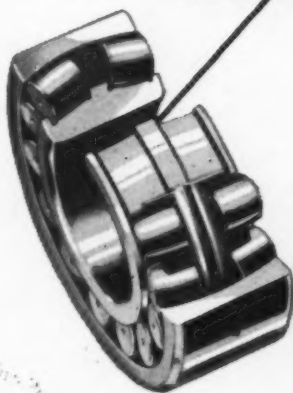
... thanks
to
Westinghouse
Sturtevant
fans

bearings by SKF

Slicing under the Houston Ship Channel, Washburn Tunnel is guaranteed abundant fresh air regardless of heavy traffic, thanks to the last word in engineered ventilation.

Two huge Westinghouse-Sturtevant Fans, regulated by automatic electronic controls and with a maximum capacity of 684,000 CFM, supply a complete change of air every two minutes. Friction, need for lubrication and inspection are held to the minimum by SKF Spherical Roller Bearings. For these reasons, SKF has been specified for most of the nation's major tunnel-fan installations. They're equally sound reasons why your SKF Distributor should always be considered first when it's a question of bearing replacement, of obtaining the ultimate in long-term, trouble-free service.

7213-A



8

REASONS

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IS PREFERRED
BY ALL INDUSTRY

integrity
craftsmanship
metallurgy
tolerance control
surface finish
product uniformity
engineering service
field service

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—manufacturers of SKF and HESS-BRIGHT bearings.

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WROT WASHERS

Better
WASHERS
... **Competitively Priced**

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**WROUGHT WASHER
MANUFACTURING CO.**

The World's Largest Producer of Washers

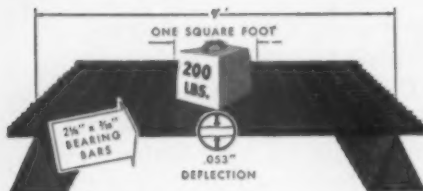
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Tri-Lok

RECTANGULAR

OPEN STEEL FLOORING



The locked-in strength of Tri-Lok enables it to stand up under heavy loads—even on long spans. Get maximum strength, air and light with minimum weight.

Tri-Lok is also available in Diagonal, or Super-Safety U-type Flooring, and in Stair Treads of all types. Write for Bulletin KP 1140.

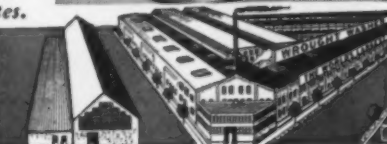
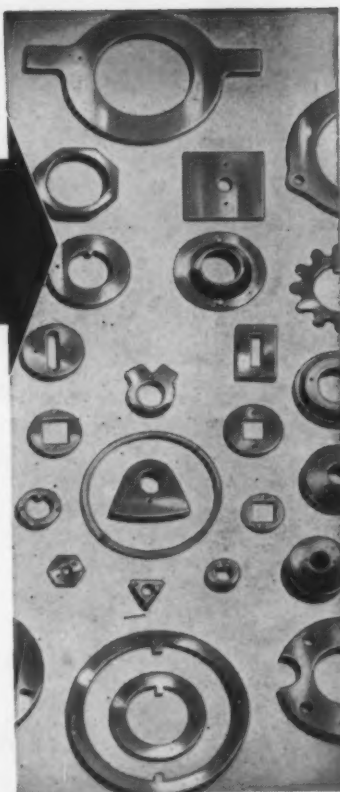
The Tri-Lok Company is also equipped to furnish *riveted* and *Tri-Forge welded* open steel flooring. Tri-Lok can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc.

DRAVO CORPORATION

National Distributor for the
Tri-Lok Company

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(Continued from page 278)

The data that will be available when all this research is completed can be expected to hasten the day when titanium realizes its commercial possibilities.

Land of Plenty

One of the most encouraging aspects of titanium development is the abundance of the resource. It ranks ninth among the elements and fourth among the metallic elements.

America is fortunate in having, within her own borders, sufficient known deposits to make her independent of foreign sources. Known reserves in North America contain an estimated 110 million tons.

The huge capital outlay required for production of titanium is perhaps the most important factor now limiting its use. Industry is understandably reluctant to make the heavy investment involved, especially in view of the possibility that much cheaper methods of production and processing are likely to result from the intensive research and development work now going on. Nevertheless, a number of companies are now in production, and more are expected to enter the field.

NEW ALKYD PLASTIC

A third type of alkyd molding compound has been announced by the Plaskon Division, Libbey-Owens-Ford Glass Co., sole producer of this group of thermosetting plastics, which were first introduced in late 1948. The new material, designated Plaskon Alkyd 422, will be sold in granular form and is described as a flame-resistant compound with improved electrical properties.

Comparable in most other respects to the present compounds of this type (Plaskon Alkyds 411 and 420), the new material is listed as self-extinguishing under ASTM and Underwriters Laboratories flame-resistance tests. The new alkyd compound retains its electrical properties on exposure to high humidities and temperatures and, as further evidence of its general moisture resistance, quickly regains its electrical properties after periods of immersion.

Although water absorption in itself may not be deleterious to molded plastic parts, the electrical properties of such parts can be unfavorably affected by the presence of excessive moisture for prolonged periods of time.

Since many electrical systems, particularly those used in military equipment, may be required to operate under damp or humid conditions, the practical importance of this improved moisture resistance is readily evident.

The new compound possesses the same fast rates of cure (molds about four times as fast as standard thermosetting plastics), the same high arc resistance, insulation and low loss properties, high heat resistance, and dimensional stability as the other members of the alkyd "family" of molding materials.

The alkyd compounds lend themselves to high rates of production on self-
(Please turn to page 282)

Our Hat's in SOME Ring!

And all this new Diesel Power is going
"right on the line" for the SOUTH-
WEST shipper and traveler.

Diesels, Diesels, Diesels and more
Diesels, that's what the Southwest's
main supply line—the Katy—is putting
on the line for you this year.

New, improved, giant road Diesels to
pull longer, heavier freights, farther
faster . . . More Diesel yard switchers to
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times in the vigorous Southwest of an
alerted nation.

And that's not all . . . many, many equip-
ment and service improvements to speed
your receiving schedules, simplify your
Delivery problems.

Yes, in '51 Katy's on the run with
expanded facilities coupled to the depend-
able, friendly, interested attention to
your freight and passenger problems the
Southwest has known for almost 80 years.

Your local Katy representative will be glad to
tell you even more about Katy's many new
plans . . . and how you may benefit by shipping
and traveling Katy, Southwest.

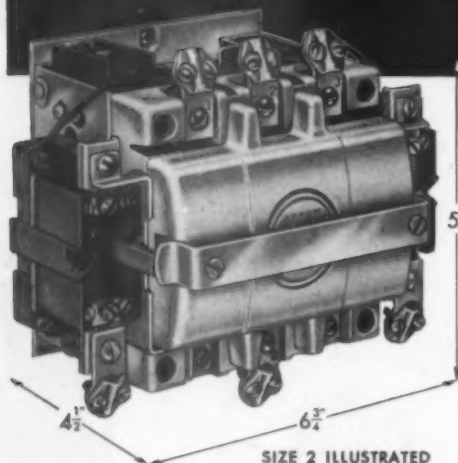


39



MAGNETIC STARTERS

Preferred by **ENGINEERS and PRODUCTION MEN**



Because

- MOST ADVANCED DESIGN
- TESTED AND APPROVED
- JUST HALF THE SIZE
- REDUCED WEIGHT
- EASY TO WIRE AND SERVICE
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Your Logical Source of Supply for Motor Control



THE ARROW-HART & HEGEMAN ELECTRIC CO.

ARROW-HART

2508 Hawthorn St., Hartford 6, Conn., Phone 5-1144

(Continued from page 280)

contained, completely automatic molding machines that generally incur lower operating and tooling costs than conventional compression molding equipment and processes.

The alkyd compounds have found wide use in civilian and military applications, including television, radio and radar electronic components, automotive ignition system parts, electrical switches and instruments, magnetic motor starters, and other products.

Plaskon recently announced that no shortage of alkyd molding materials is expected, and the completion of a new plant solely to make these compounds and scheduled for operation in August of this year should provide adequate production facilities for rising demand.

1 1 1

**YALE ANNOUNCES NEW
SELF-CENTERING ROTATING CLAMP**

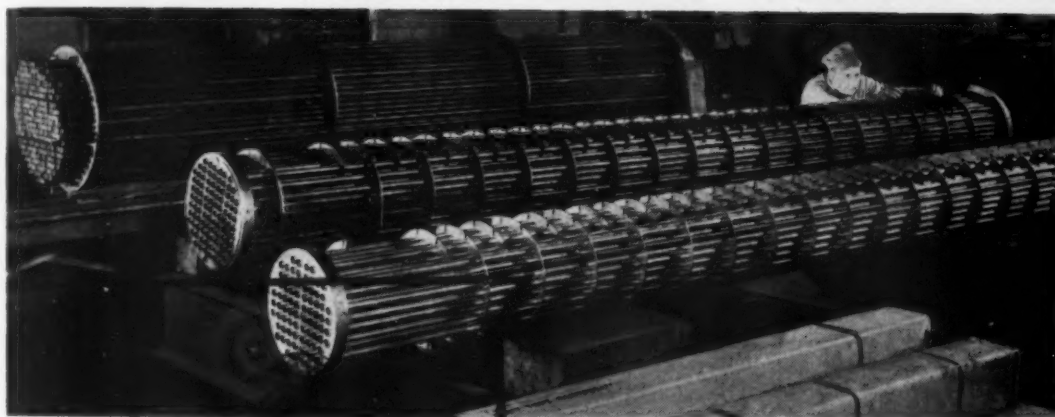


The Philadelphia Division, Yale & Towne Manufacturing Company, Philadelphia, Pa., has perfected a new hydraulically operated clamp for industrial fork trucks, which enables bales, bins, drums, and miscellaneous containers to be picked up and transported on the centerline of the truck. Conventional clamps and grabs of a similar nature do not have synchronized movement of arms in opening and closing, making it difficult to carry loads, unless the truck is lined up perfectly with the centerline of the load. The off-center loading resulting from these clamps makes the truck unstable, particularly when the clamp and load are rotated.

When used with a rotator, the clamp does not creep off center. Loss of pressure grip in arms is minimized. A variable clamping pressure permits handling of any type load, such as fragile cartons, heavy containers, bales and boxes.

The self-centering arms have an inside opening range from 17" minimum to 66" maximum. The clamp will handle loads up to 6,000 pounds, and can be installed on gasoline or electric trucks.

(Please turn to page 284)



A. O. SMITH
designs with
TRENTWELD

When A. O. Smith, big name in steam and heat transfer equipment recently designed and built a heat exchanger unit for Socony-Vacuum — TRENTWELD Stainless Steel tubing was used throughout. This heat exchanger unit for use in the petroleum industry is another example of how TRENTWELD is preferred by designers for products where stainless steel tubing fits the bill.

And here's why: TRENTWELD is the product of tube specialists. That means you're assured uniform quality and specifications of manufacture that meet your most exacting needs. Then too, TRENTWELD is available in a full range of sizes— $\frac{1}{8}$ " to 36" in diameter, in all grades and finishes. When the job requires stainless steel tubing, check with us. TRENT TUBE COMPANY, *Subsidiary of Crucible Steel Company of America*. General offices and plant — East Troy, Wisconsin; Sales offices in principal cities.

TRENTWELD

S T A I N L E S S S T E E L T U B I N G

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For Production—Maintenance—Construction Work



SUPERDUTY 1/4" PORTABLE Electric Drills—
Standard Duty, Heavy Duty, and Extra Heavy Duty
Models; each available in 8 speeds, 500 to 5000 rpm.
Choice of pistol or saw type grip. 48 styles and models.



NEW also Superduty 3/8" and 1/2" Drills

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Reserve Power • Ball and Needle Bearings • Heat-treated,
Precision-cut Gears • Compact, Streamline Design •
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SUPERDUTY Portable Electric Drills

for Production • Maintenance • Construction Work

GLYCERINE PRODUCTION AND CONSUMPTION

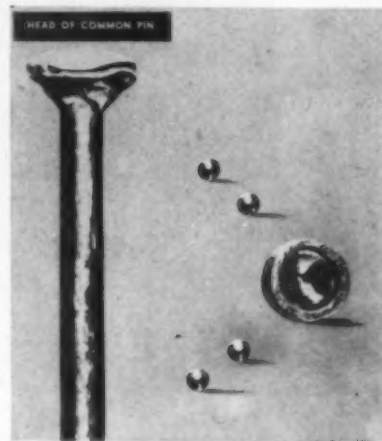
Statistics released recently by the Department of Commerce reveal that glycerine production, calculated as 100 per cent crude glycerine, reached a total of approximately 66,340,000 pounds for the first quarter of 1951. This represents an increase of well over 11 million pounds, or about 21 per cent, over the total of 54,750,000 pounds produced during the same period last year.

Consumption of glycerine jumped from 52,674,000 pounds for the first quarter last year to 58,131,000 pounds for the same period this year, an increase of roughly 10 per cent.

1 1 1

MINIATURE BALL BEARING SMALLER THAN HEAD OF A PIN

No. What you see in the illustration photo is not a steel spike but a highly magnified portion of a common pin. Next to it is the smallest pivot ball bearing made in America. The balls themselves are about as big as a flea's knees and almost as hard to see with the naked eye.

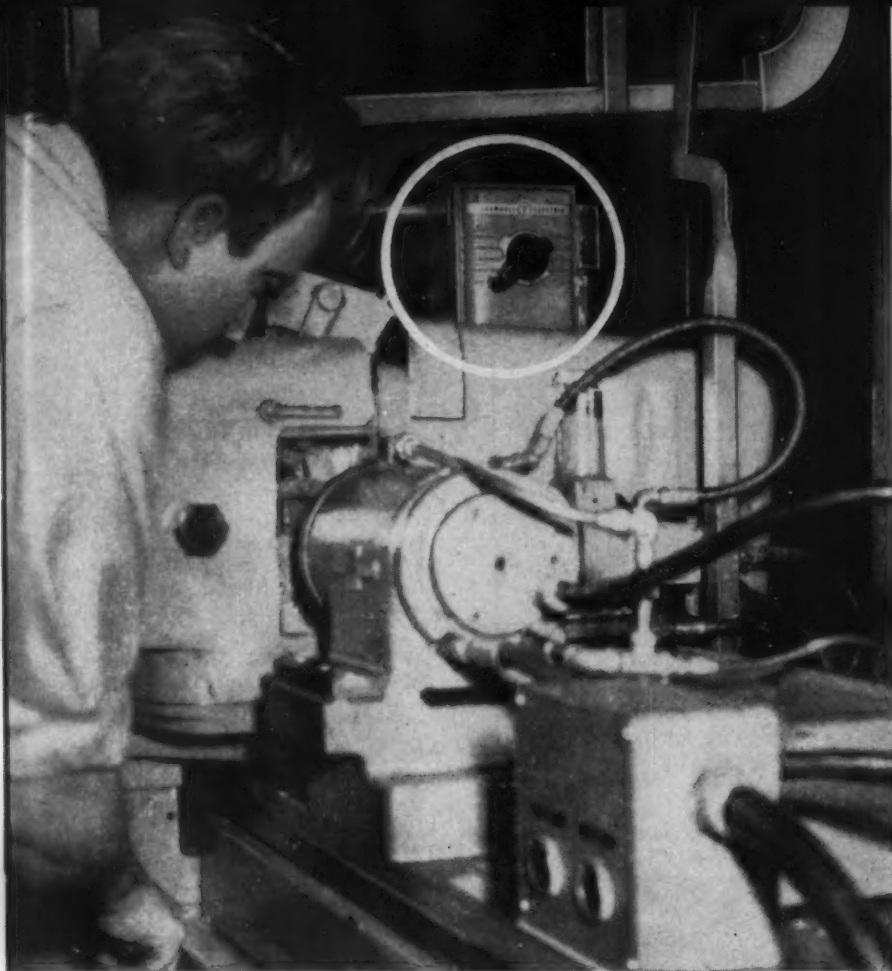


Tiny new miniature ball bearing shown next to head of common pin.

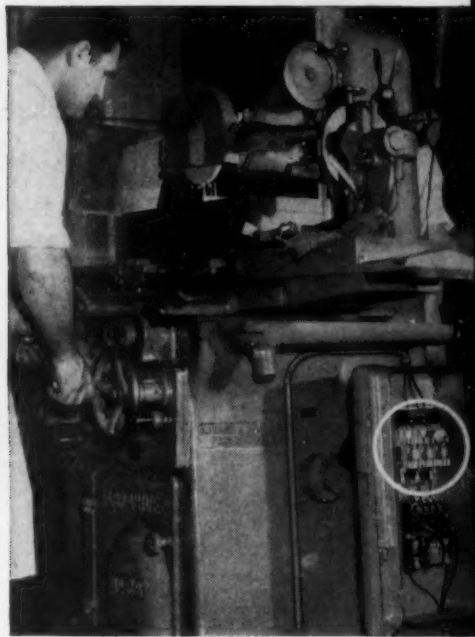
Made by Miniature Precision Bearings, Inc. in Keene, New Hampshire this new ball bearing has an outside diameter of 1.5 millimeters. It is the latest addition to the company's series of miniature pivot bearings. Diameter tolerance is held to plus zero and minus two ten-thousandths of an inch. To achieve these tolerances, measurements are made with instruments accurate to 20 millionths of an inch. The pivot shaft holds the balls in place. The raceway wall itself is designed so that its mass occurs at points of greatest strain. This permits relatively heavy loads under severe conditions of shock and vibration. These miniature ball bearings are rapidly replacing jewel bearings for instruments used under such conditions.

Back in 1919, MPB was the first to produce radial ball bearings of 3/4" o.d. Since then, the MPB line has been expanded to more than 70 types and sizes including many styles of radial, pivot,

(Please turn to page 286)



IN SAFETY SWITCHES—Marlin-Rockwell Corporation's ball bearing factories use 30 ampere HCI switches as disconnects for high frequency motors used to power internal grinders. HCI interior is removable for easy wiring and inspection. No exposed live parts when switch is OFF and door open. Underwriters' Laboratories Approved.



IN COMBINATION STARTERS—Rugged, simple construction of HCI is perfectly adapted to use as disconnect in combination starters.

SAFE LOAD BREAKING with Unique "Arc-Quench" Action

For the first time in a safety switch, magnetic repulsion is used to break load quickly, safely.

In Trumbull's HCI (High Capacity Interrupter) Type A switch, double-break contacts are projected and withdrawn with piston-like speed and force. The arcs repel each other and strike against grid pins, breaking into smaller arcs which cool rapidly.

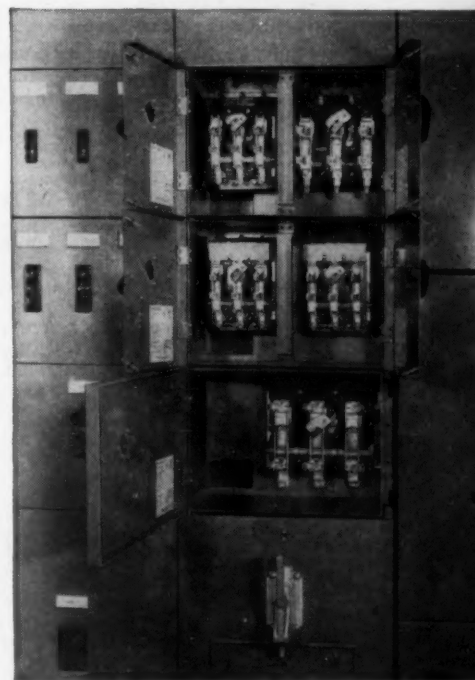
The unique arc-quenching action provides safety, lengthens contact life by preventing pitting, and gives the switch much greater life expectancy. HCI withstands heavy short circuits without damage.

Its initial success as a safety switch has led to its adoption for use as disconnect in combination starters, control centers and switchboards.

Write for Bulletin TEC-10 which describes the HCI fully.

TRUMBULL ELECTRIC

DEPARTMENT OF GENERAL ELECTRIC COMPANY
PLAINVILLE, CONN.



IN SWITCHBOARDS AND CONTROL CENTERS—Compact 30 and 60 ampere HCI switch interiors can be mounted in twin switchboard units (100 ampere HCI takes same vertical space), saving trough space and providing dependable short-circuit protection and sure ON-OFF handle indication.



**Yes, Theoll® COLD-HEADING
AND ROLL THREADING PROCESSES
MAKE BETTER PARTS...
Stronger, Faster,
Cheaper.**



Countless small parts usually made by conventional turning processes—by stamping, drawing, casting or molding—can be made better... stronger... cheaper by cold-heading and roll threading.

Machining of Cold-Headed Parts is hardly ever necessary because shank and head dimensions can be held to very close tolerances. Rolled threads are produced to American Standard dimensions.

Here are just a few of the many parts formed or roll threaded...

Screws	Plastic Inserts	Stems
Bolts	Thumb Screws	Arms
Studs	Wing Nuts	Plugs
Rivets	Small Gears	Prongs
Rods	Tongue—Clevis	Points
Links	Segments	Hooks

Single or multiple secondary operations can be performed on cold-headed parts to produce special characteristics required to fit the part for its particular application. These secondary operations include drilling, tapping, milling, shaving, flattening, notching, flanging, trimming, serrating, bending, off-setting, slotting, fluting, swaging, knurling, pointing, heat treating, plating and finishing.

**ARE YOU
MISSING THIS SAVING?**

Write or call in a Theoll engineer. Explain your production problems. He will tell you where you can save money, speed production, improve your product appearance.

Theoll
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2700 ROOSEVELT ROAD
CHICAGO 30, ILLINOIS
SCREWS • BOLTS • NUTS
Lightweight Fasteners and Holding Devices

(Continued from page 284)

thrust and other ball bearings ranging from $\frac{3}{8}$ " down to this new 1.5 mm. Tolerances are measured in ten thousandths. (One ten-thousandth compares to one inch as six and one-third inches compares to one mile.) Uses include various precision instruments, textile rollers, servo mechanisms, gyros, transits, fishing reels, etc.

PACKAGE BEARINGS IN METAL CANS

Packaging of bearings is a subject that for years has been investigated by anti-friction bearing manufacturers in an effort to preserve their finished products. The damaging effect of moisture and dirt on bearings, stored for replacement purposes, has been a problem for which an entirely adequate solution has not been found to date.

Bearings shipped to the armed forces for their material, are subjected to climatic conditions much worse than those usually found in industry. They are often stored with little protection from the weather and in many cases the package of bearings is exposed to salt water and other extremely corrosive materials. Handling of packages of necessity is often very rough. As a result, the present method of packaging bearings is considered inadequate for all conditions.

The Timken Roller Bearing Company, being a large supplier of bearings for the armed forces, is actively cooperating with them in an effort to solve this problem by packaging the bearings in metal cans. Several packaging machines have been purchased and a pilot line is being set up to try various methods of packaging the bearings in this manner and to determine the type of can which will be most practical. This type of packaging, being new to the bearing industry, will be thoroughly tested before it is offered to the armed forces. It is believed that canned bearings can be stored under the worst conditions for a period of time up to ten years without deterioration of the bearings.

FIRE TRUCK WITH EMPHASIS ON CIVIL DEFENSE FIRE PROBLEMS

A new self-contained, fire-fighting crash truck, equipped to attack any type of fire, was demonstrated recently by Walter Kidde & Company, Inc. The first crash truck built, at the sole expense of a manufacturer, in accordance with recommendations of the National Fire Protection Association Committee on Aviation and Airports, the Kidde Fire Destroyer was designed for airport fire emergencies and for municipal fire departments with particular emphasis on civil defense fire-fighting problems.

The truck has built-in systems which deliver water, foam, fog, and carbon dioxide. It can dispense two tons of

(Please turn to page 288)

IF YOU PRODUCE METAL PARTS BY—

- Casting
- Screw Machines
- Sawing
- Milling
- Drilling
- Extruding or Stamping

You are probably very much interested in a faster, better way of deburring than by manual methods with files or abrasive wheels.

Write for this
BULLETIN (No. 44)



On pages 4 and 5 you'll find a detailed discussion of the Magnus method of Barrel Deburring which completely eliminates manual deburring on a wide variety of metal parts and, in cases where barrel deburring is already in use, does a better job than conventional methods.

Bulletin 44 also covers modern Magnus methods for removing rust and scale from metal parts, using the barrel method... and the complete line of Magnus Lubricants for vastly improved ball burnishing.

There's no obligation
when you write for your copy.

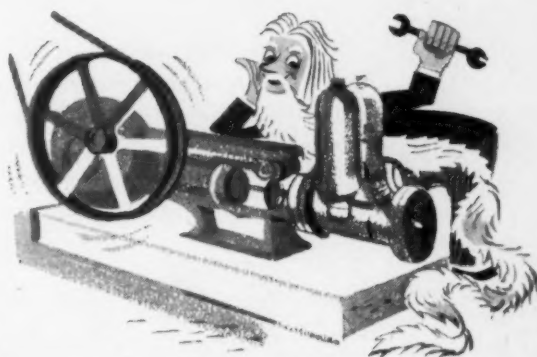
Serving Industry 30 Years
MAGNUS CHEMICAL CO., INC.
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MAGNUS
CLEANERS
EQUIPMENT

For thousands of years
Orientals have known ramie
as the long-lasting fibre . . .



Now . . . Johns-Manville
makes ramie fibre into
the long-lasting packing . . .



That's why **NAVALON** cuts packing costs to the bone . . .

IF YOU NEED A PACKING for reciprocating service that can take punishment and *last* . . . against fresh or salt water, brine, cold oil, and other cold liquids . . . try Navalon.

Navalon's long-lasting properties are inherited directly from ramie—a fibre that has been known for thousands of years for its strength and its rot-resisting qualities.



Johns-Manville PACKINGS & GASKETS

Because these long-lasting qualities of ramie—its high tensile strength and its rot-resistance—have been retained in Navalon, and because of a special Johns-Manville process that imparts unique lubricating properties, Navalon is consistently out-performing other packings in cold liquid service. In plant after plant, Navalon is standing up where other packings fail . . . reducing down time . . . and cutting packing costs to the bone!

If you have a tough packing problem, we suggest that you try Navalon. You can get it through your local packing distributor—or if you would like further details, write for folder PK-32A. Just fill in and mail the coupon below.



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New York 16, N. Y.

Please send me your folder on Navalon Packing (PK-32A).

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Company

Address

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FOR HIGHEST QUALITY

Metal Name Plates

Skilled craftsmanship, long experience and the finest equipment, combine here to produce basic value—*quality name plates at the right price*. For lasting identification, clearness and permanent readability in name plates and instruction plates depend on the



Ask Us to Quote

Send a rough sketch, blueprint or sample, with specifications, for quotation—or write us fully about your requirements in name plates, instruction plates, dials, panels, scales, etc. Here standout identification and enduringly fine appearance costs no more!

ALUMINUM ANODIZING

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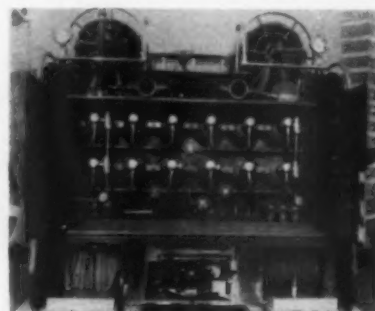
Metal Name Plates, Dials and Panels, Etched or Lithographed • Etched Metal Scales, Clock Dials, Trophy Plates, Plaques, Advertising Specialties • Etched Metal Panels for elevator and architectural uses • Coin Banks • Lithographed or Screened Plastic Name Plates or Dials • Aluminum Anodizing by the Alumilite Process.

SUBSIDIARY OF DODGE MANUFACTURING CORPORATION, MISHAWAKA, INDIANA

(Continued from page 286)

combined extinguishing agents per minute. Also classified as a Class A municipal pumper, the Fire Destroyer carries 1000 gallons of water, 1200 pounds of carbon dioxide in twelve 100 pound cylinders relayed in two banks of six each, and a large foam tank.

It has a 360-degree-swing turrent nozzle above the cab for the delivery of water, foam, or fog and can throw a stream of water 150 feet. On the upper deck are four 150' hoses mounted on reels, two for foam or water, and two for carbon dioxide.



Open doors on back of truck show supply of 12 100-pound cylinders of carbon dioxide

The Fire Destroyer's heavy duty chassis is powered by a 162 H.P. motor which drives it at speeds up to 50 miles per hour. It has an over-all length of 25' 6", is 8' wide, 10½' high, and weighs under 30,000 pounds.

The truck's comparatively high speed and short wheel-base give it extreme maneuverability—a factor of great importance in answering emergency fire calls where debris or traffic may be encountered en route.

1 - 1 - 1

SUBSTANTIAL REDUCTION IN INDUSTRIAL ACCIDENTS REPORTED

American workers were a lot safer in 1950, the National Safety Council reports. Industrial injury rates for last year, released by the Council in advance of the 1951 edition of its annual statistical yearbook, "Accident Facts," show a substantial reduction in both the frequency and severity of 1950 accidents as compared with 1949.

Twenty-nine of the 40 basic industry classifications reduced their frequency rates, and 23 reduced severity rates.

The accident frequency rate for employees in all industries submitting company reports to the Council, based on the number of disabling injuries per 1,000,000 man-hours, was 9.3 in 1950—a reduction of 8 per cent from the year before.

The communications industry again led all other industries by turning in the lowest employee frequency rate. Its rate was 2.05—a 4 per cent reduction from 1949. Aircraft manufacturing again ranked second with 4.17, followed by the electrical equipment industry with 4.28 and steel with 4.63.

Lumbering stayed at the bottom of (Please turn to page 290)

WHAT ABOUT

Wishful Thinking?

Merely hoping a certain valve will do a required job is not enough. Maybe it will—at first. But if it's not the right valve in every particular—design, construction and materials—"it won't be long!"

There's a Powell Valve specially adapted to each and every flow control service. Why not always be sure with Powell?

Gate, Check, Globe and Y Valves, in Bronze, Iron, Steel and Corrosion-Resisting Metals and Alloys

*Quality fine
throughout
"The Line"*

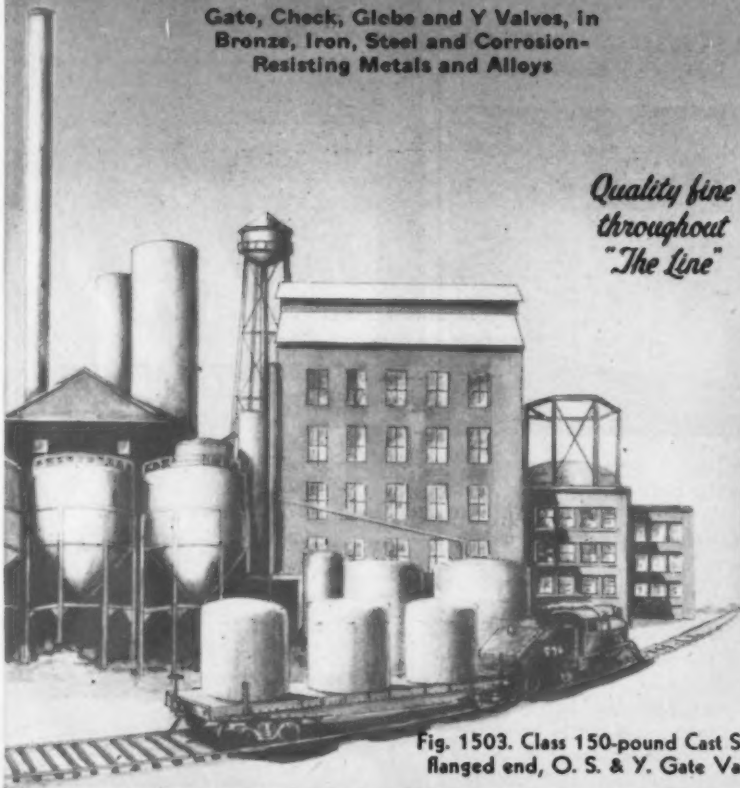
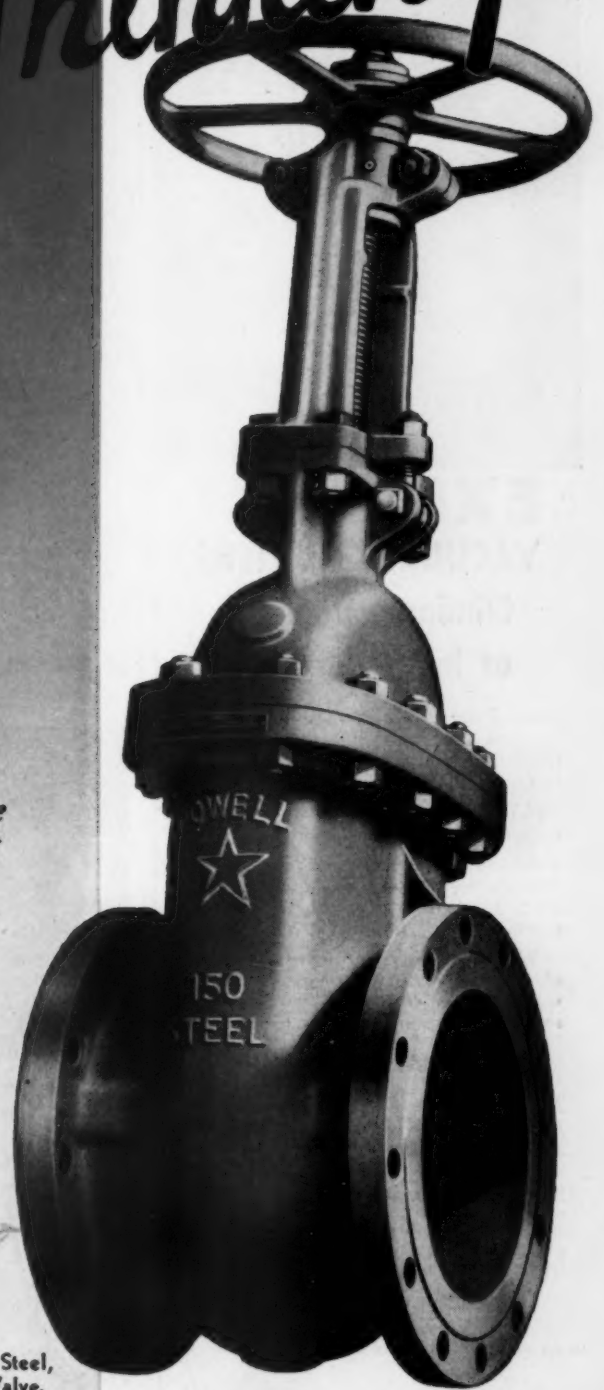


Fig. 1503. Class 150-pound Cast Steel, flanged end, O. S. & Y. Gate Valve.



POWELL

The WM. POWELL CO., 2525 Spring Grove Ave., P. O. Box 106, Station B, Cincinnati 22, Ohio



EXIDUST VACUUM CLEANERS

Eliminate Dangers of Industrial Dust

Burned-out factories . . . hospitalized workers . . . contaminated products . . . damaged machinery—these are the hazards of dust!

Exidust removes the danger quickly, completely—at a low cost.

Exidust's powerful suction picks up any material—soot or sand, flour or coal dust, grime or metal chips. Reclaims chemicals, fuel, metals.

Works on any surface—wood, linoleum, cement. In any location—floors, walls, ceilings, overhead beams . . . outside and inside machinery.

INDIVIDUALLY ENGINEERED

Exidust consists of inlet valves on each floor, piping, and a centrally-located Billmyre Vacuum Producer and separator-filter tank. Each individual plant design is effective—economical—based on 30 years' experience. Send for Exidust Bulletin D-4A. Write: Lamson Corporation, Billmyre Blower Division, 415 Lamson St., Syracuse 1, N. Y.



(Continued from page 288)

the frequency list in 1950 with a 46.85 rate, but this represented a 2 per cent reduction. The frequency of coal mining accidents went up 5 per cent, and that industry remained in the next to last position with a 43.64 rate. Mining other than coal was third from the bottom, just below clay products.

The accident severity rate for all industries reporting to the Council, based on the number of days lost per 1,000 man-hours, was .94 last year—a reduction of 8 per cent from 1949.

Communications also had the lowest severity rate, leading all other industries with a rate of .12—a 20 per cent drop from 1949. The service industry came up from fourth place in 1949 to second in 1950 with a substantial 37 per cent reduction to give it a rate of .19. The tobacco industry stayed in third place with no change in its rate of .23, just ahead of printing and publishing.

In terms of severity, coal mining once more stayed at the bottom of the list, with the highest accident severity rate of 7.91—a 16 per cent increase. Lumbering was next to last with 4.79. Mining other than coal continued to improve its rate with a 30 per cent reduction to 3.25.

1 1 1

UNPACKER SAVES MAN-HOURS AND MAKES FOR LESS BREAKAGE



Illustration shows automatic unpacker built by Edward Ermold Company, New York, N.Y. in operation at one of the plants of the Falstaff Brewing Corporation, St. Louis, Mo. The machines are operating on four of the brewing company's bottling lines, and a total of eleven will be operating soon. It is reported that the machine when feeding a 24-wide soaker, takes the place of two men, and the uniform handling of bottles tends toward less bottle breakage. The automatic unpacker feeds a steady flow of bottles to and through the soaker, eliminating gaps in the line frequently occurring in the manual unpacking. This means that the filler, which receives its bottles from the soaker and which is pacesetter for the entire bottling line, does not have to break its pace for lack of empties. In the operation pictured, returned 12 oz. export beer bottles are removed by the machine automatically from two-flap fiber cases. The bottles then feed directly to a table attached to an automatic bottle cleaning machine.



THEY FILL THE BILL

Harrisburg Steel products
have met exacting demands
for 99 years . . .



HARRISBURG COUPLINGS. Seamless steel pipe couplings made to A.P.I. and A.I.S.I. specifications.



HARRISBURG FLANGES. Drop-forged steel pipe flanges made to A.S.A. standards.



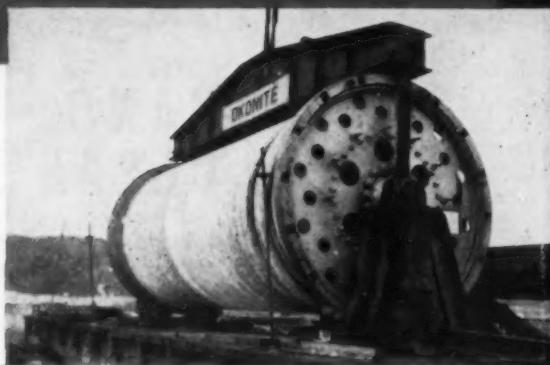
HARRISBURG FORGINGS. Commercial drop forgings of many types, mass-produced.

WRITE for catalogs and prices on these products . . . or Harrisburg high-pressure seamless steel gas cylinders or liquefied petroleum gas cylinders.

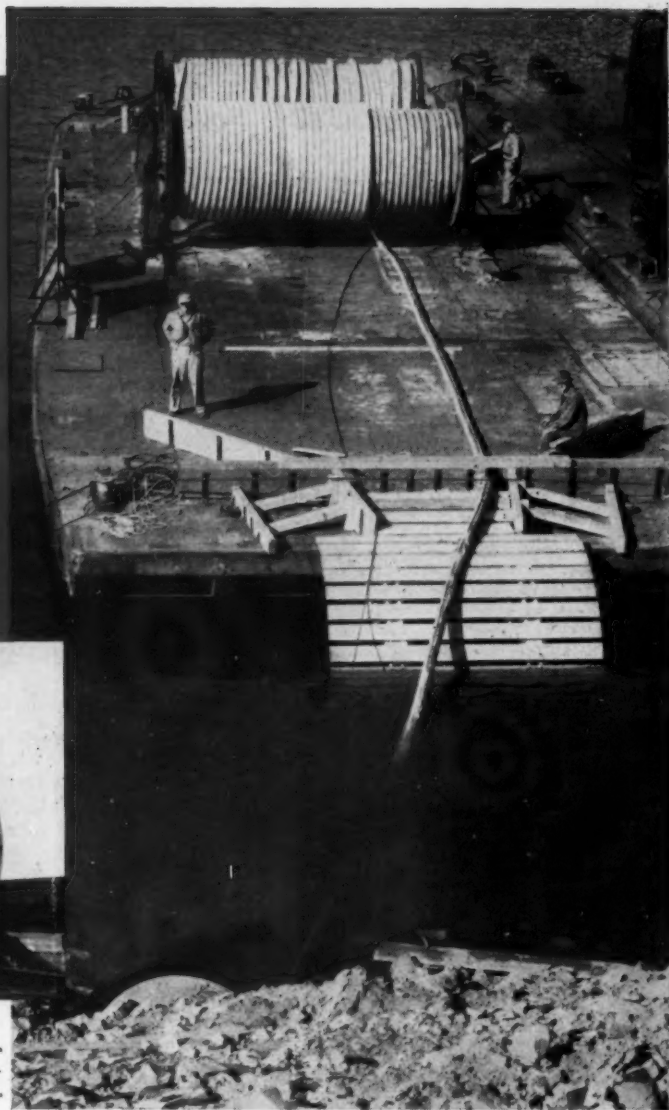
Harrisburg
STEEL CORPORATION
Harrisburg 19, Penna.

99 YEARS IN PENNSYLVANIA'S CAPITAL
Custom-Built Quality Products in Quantity

GIANT OKONITE SUBMARINE CABLES BRING MORE POWER TO PORTLAND



Over 55 tons of 5-inch Okonite cable... laid across the Willamette River by Portland General Electric Company in just 40 minutes! Okonite reels were specially designed to expedite the job.



Two 13 Kv Okonite submarine cables were recently laid simultaneously across the Willamette River, Portland, Oregon in 40 minutes. This notable engineering feat represents a vital transmission link between a power plant on the east side of the city with the underground system in the west side business district.

Measuring 5 inches in diameter and weighing 31 pounds per foot, these 1800-foot rubber insulated cables were protected by steel armor wire. Special Okonite-designed reels helped to speed the laying.

Of particular interest in the engineering of these cables was the high voltage testing used to check out any tiny hidden defects which would not show up under ordinarily-specified test voltages. Designed for operation at 13,000 volts, these cables

were tested at 93,000 volts for 15 minutes at d-c during fabrication. After armoring they were tested at 75,000 volts for the same period at d-c — in addition to a-c high voltage tests.

The 500,000 CM conductors in these cables were insulated by the famous Okonite strip process, assuring absolute uniformity of wall thickness... perfectly centered conductors. As in other Okonite cables, the insulated conductors were vulcanized in a continuous metal mold under high pressure, resulting in higher density, greater physical and electrical uniformity.

No matter what Okonite cable you buy, you can be sure of obtaining true cable economy... the economy of long life and uninterrupted service. The Okonite Company, Passaic, N. J.

THE BEST CABLE IS YOUR BEST POLICY

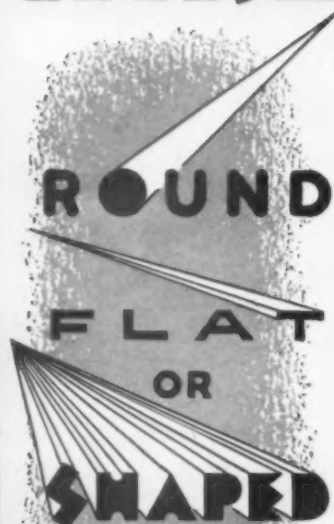


OKONITE



insulated wires and cables

PAGE WIRE



LOW CARBON
HIGH CARBON
STAINLESS
SPECIAL ALLOY
ARMCO IRON

**You draw the Shape
—Page can draw
the Wire**

—the way you want it
for your production—whether
it's ALL of your product,
or only a part.
Cross-sectional areas up
to .250" square; widths to $\frac{3}{8}$ ";
width-to-thickness ratio
not exceeding 6 to 1.

**for Wire or
Information about Wire—**

*Get in touch
with Page!*

Monessen, Pa., Atlanta, Chicago,
Denver, Detroit, Los Angeles,
New York, Philadelphia, Portland,
San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

UTILITY INDUSTRY WELL PREPARED TO HANDLE ALL DEMANDS

"Today, the electrical industry faces two sets of problems," declared vice president John K. Hodnette of Westinghouse Electric Corporation, at The Edison Electric Institute Convention in Denver. "Our common problems fall into short-range and long-range areas. Many of the short-range worries are engendered by the necessity for a dual economy—one for peace and one for war. Such a program obviously is something entirely new in our industry. No one knows how well it will work. But, workable or not, the success of the program depends chiefly on the performance of our country's strongest asset—its industrial plant.

"The long-range problems are how to meet permanently higher fixed costs and break-even points when the emergency is over; whether the industry has committed itself too far ahead; and who in the future will use all the new generating capacity that has been built.

Can Industry Handle the Job?

"Only one question counts today—can industry handle the job that is being asked of it? On the basis of your industry's expansion in the past five years, one would answer with an immediate and unqualified yes. As an unofficial representative of the electrical manufacturing industry, I would like to say that all of us are gratified to have helped in that expansion. Your generating capacity is 40 per cent higher than it was on V-J Day. Since the war, you have spent 10 billion in the largest construction program ever undertaken by any single industry in the United States. In this emergency you are ready with almost half of your generating capacity in efficient, economical equipment that is less than ten years old.

But even this record is not enough in itself to answer the question I have raised. That is all in the past—the real answer depends on the size of the job yet to be done.

You will have a 50 per cent increase in capacity in the next four years, which is even more than called for in President Truman's economic message of last January. Hollywood hasn't yet discovered words super-stupendous enough to do justice to that record. In short, the utility industry is, and will be, well prepared to handle all demands for peace or war—cold or hot.

You must assume, of course, that your suppliers will be able to meet schedules on the 26 million kilowatts you now have on order—and will be able to meet any further demands you may make. That depends on a number of factors, not all of them under the control of those directly concerned. But it is, I feel, a sound assumption that you will get what you have ordered and, insofar as can be seen today, close to scheduled delivery dates.

(Please turn to page 298)



HAND CLEANERS

Skilled hands are a valuable asset to management, as well as an important responsibility of it. Mione Hand Cleaners can insure that asset by helping to share the responsibility for keeping skilled hands in prime working condition.

WORKERS like the quick-lathering, gentle-scrubbing, easy-rinsing action of Mione. And its very definite skin conditioning value.

MANAGEMENT likes the safe, sanitary, efficient, trouble-free Mione features, plus its economy per pound, low cost per scrub-up, and the basic economy of skilled hands always at top productivity.

YOUR SUPPLIER of washroom needs can give you full particulars about Mione so that you, too, can benefit from the know-how gained from 40 years of making nothing but better and better soap for the hands.

**WRITE US FOR THE NAME OF THE
MIONE SUPPLIER IN YOUR AREA**

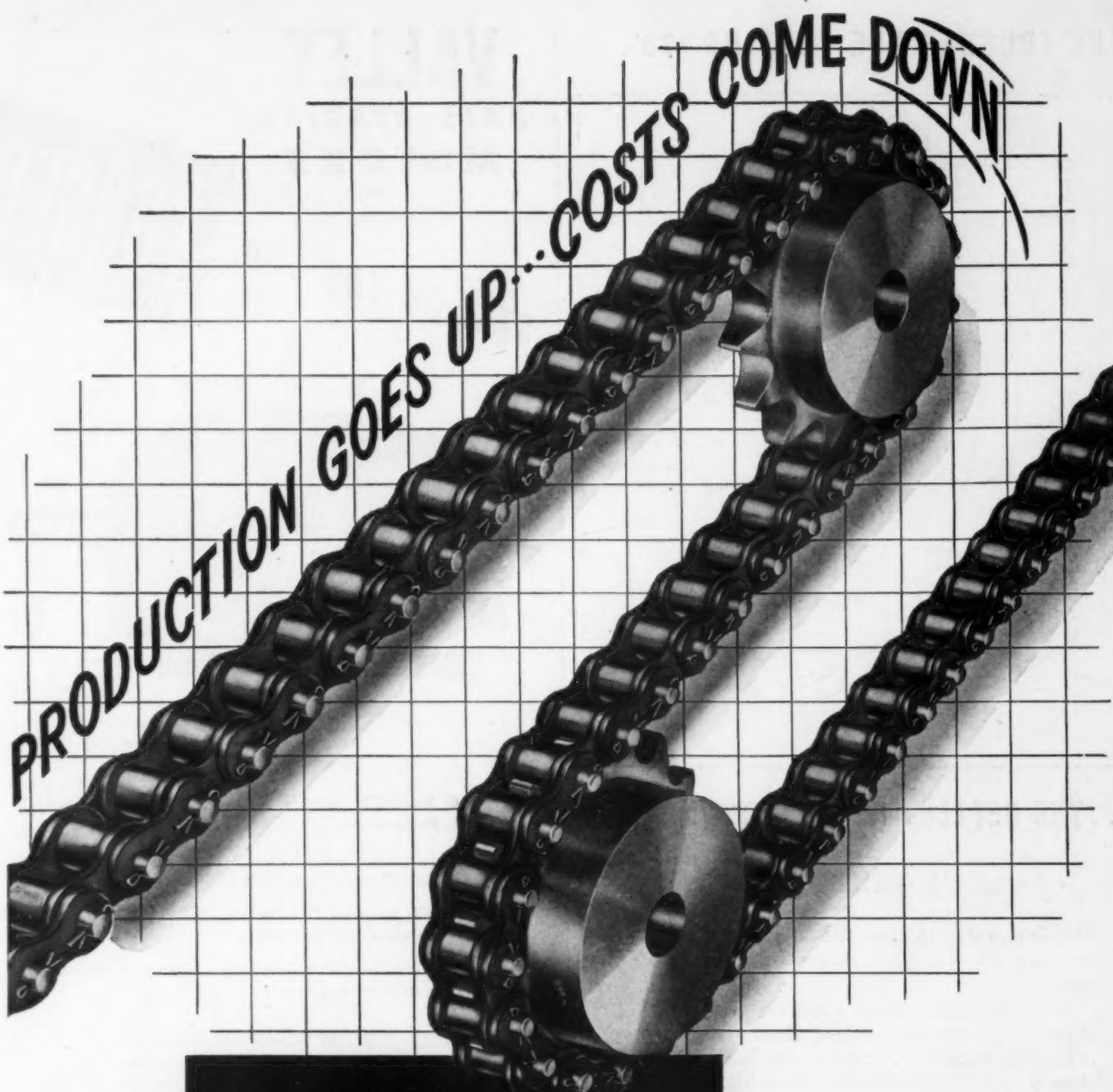
Mione

**MANUFACTURING
COMPANY**

Makers of famous hand soaps
for 40 years

COLLINGDALE

PENNSYLVANIA



With - **WHITNEY** CHAIN DRIVES

Service records prove the unusual ability of Whitney Chain Drives to deliver full rated horsepower day in, day out, without failure. To you, as a designer or user of equipment, this means time and dollars saved. Production goes up *and stays up*, while costs come down.

HERE'S WHY — the rolling contact of finely finished, alloy steel chain, meshing into accurate, cut tooth sprockets eliminate power loss because there is no slippage or friction loss. They deliver constant power smoothly and efficiently.

In addition, they absorb shock loads without breakage. And Whitney's alloy steel construction assures exceptionally long operating life . . . a vital point in keeping maintenance costs down.

But that's not all . . . Whitney Chain Drives simplify design problems. They can be operated on long or short centers without tension or excess bearing loads . . . drive shafts clockwise or counter-clockwise, simultaneously. They can be installed or taken off without dismantling shafts or bearings.

And Remember Whitney Service

In addition to the service facilities of more than 130 Whitney Distributors, Whitney maintains a network of 15 Field Engineering Offices, located throughout the country. The experience gained through more than 50 years of solving drive problems is at your service. From the complete line of Roller, Silent and Conveyor Chains, Whitney Engineers can recommend, without bias, the proper type of drive for your application . . . the chain drive which will give you the best service at lowest cost. Consult your nearest Whitney Field Office or write us direct for catalog and complete information.

WHITNEY CHAIN COMPANY

207 HAMILTON STREET, HARTFORD 2, CONN.

THE TOUGHER THE CUTTING JOB . . .



...THE BETTER THE OPPORTUNITY FOR

abrasive cutting

Here's one way to open the door to savings . . . at least it's the *right method* . . . abrasive cutting!

And the *right* abrasive wheels are Allison. Whether you're cutting steel, glass, non-ferrous metals or ceramics . . . tube, rod, bar stock or shapes . . . Allison Wheels cut at high speeds, accurately to a few thousandths, with little or no need for after-finishing.

Let one of our qualified specialists—an Allison Abrasive Cutting Expert—recommend the right equipment and right wheel to help you cut costs where you're cutting!

We like tough jobs

... consult us about yours!

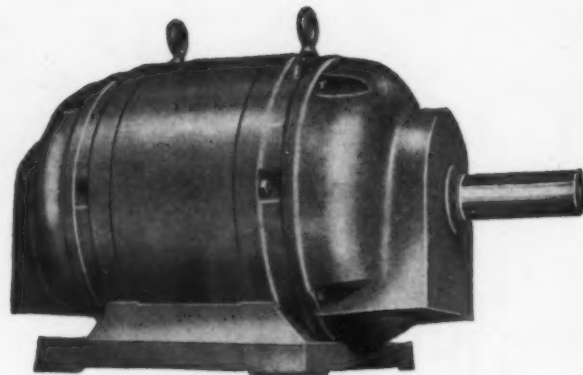
THE ALLISON COMPANY

257 Island Brook Ave.
Bridgeport 8, Conn.

Allison
ABRASIVE CUTTING WHEELS

VALLEY
BALL BEARING
MOTORS

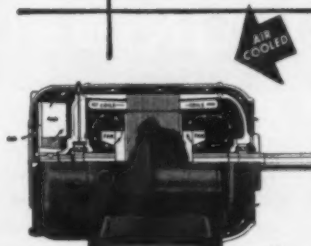
STAY ON THE JOB... **LONGER**



When specifying the power unit for your machinery, bear these exclusive VALLEY features in mind!

- Specifically designed for 'round-the-clock' duty in high temperatures.
- Drip proof and splash proof, semi-enclosed construction protects motor from harmful liquids and flying particles.
- Fully enclosed ball bearings reduce friction 75% to provide a saving in power.
- Built in 1/2 to 75 horse power sizes for wide adaptability in your power planning.

VALLEY Motors, stay on the job longer, even under heavy and continuous power demands. Thus for economical power that will last the life of your equipment—always specify VALLEY.



**TOTALLY ENCLOSED
FAN COOLED**

The latest development in Air-Cooled, Ball Bearing motors. Totally enclosed to assure protection against dripping or splashing liquids, metal chips, and damaging dust. 2 to 60 h. p.

Write For Descriptive Literature.

VALLEY
ELECTRIC CORPORATION
4221 FOREST PARK BLVD. • ST. LOUIS 8, MO.



Keep **SCRAP**

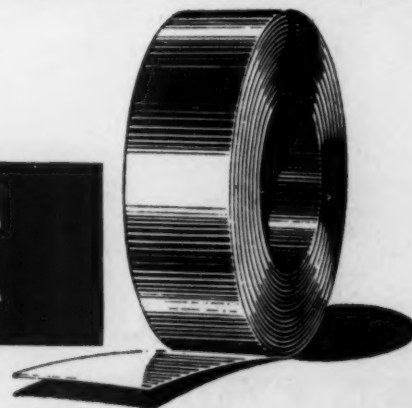
on the move!

Idle scrap does
nobody Good!

Superior Steel

CORPORATION

CARNEGIE, PENNSYLVANIA





Gulf Oil's District Manager, R. C. Somers, left, discusses plant lubrication with Donald A. Fruland, Director of Purchases for the Thermoid Company, Trenton, N. J., world-famous manufacturers of brake lining and mechanical rubber goods.

Somers of Gulf Oil Corporation says, "The P.A. is mighty important to us."

"The purchasing executive occupies a key position in our selling plans for industry," says Mr. R. C. Somers, District Manager of Gulf Oil Corporation.

"The P.A. takes an active interest in keeping plant equipment up to top production, with a minimum of mechanical delays, and appreciates the vital part played by quality lubricants and cutting oils in this important phase of plant operation.

"We try to make sure that purchasing people are well informed about our products, and they are the first points of call for us in practically every plant and industrial operation."

For the background information he needs, to save

both his own and sales representatives' time, the purchasing agent turns to his own trade paper. That is why companies like Gulf, to make their selling more efficient, advertise consistently in *Purchasing*.

Because it's the one national magazine tailored to the exact requirements of the purchasing function, *Purchasing* has the confidence and gets the attention of purchasing executives. And because it's read by P.A.s controlling 85% of industry's purchases, no schedule to industry is complete without it. For full details, write *Purchasing* 205 East 42nd St., New York 17, N. Y. Offices in Chicago, Cleveland, Dallas, Los Angeles.

PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES



A CONOVER-MAST
PUBLICATION



"Neoprene makes this sander more efficient and durable"

"On this sanding tool, the sponge pad between sanding plate and abrasive paper is made of neoprene, Du Pont's chemical rubber. That means the pad not only has required resilience, but it will stand up in rough service as well. For neoprene is tough and abrasion-resistant. It doesn't soften from heat. And it withstands frequent contact with grease and oil."

Just as neoprene is used in this sander for extra durability, it is used in other resilient products for tough industrial service. Top-grade hose, belting, packing, gaskets, wire and cable are a few examples. Wherever neoprene is used, it means longer service life, less maintenance cost. So be sure to ask about neoprene when you're buying resilient goods for your plant or product. While Du Pont makes no finished products of neoprene, your rubber-goods manufacturer or distributor will be glad to tell you about the neoprene products he supplies.

NEOPRENE

The rubber made by Du Pont since 1932

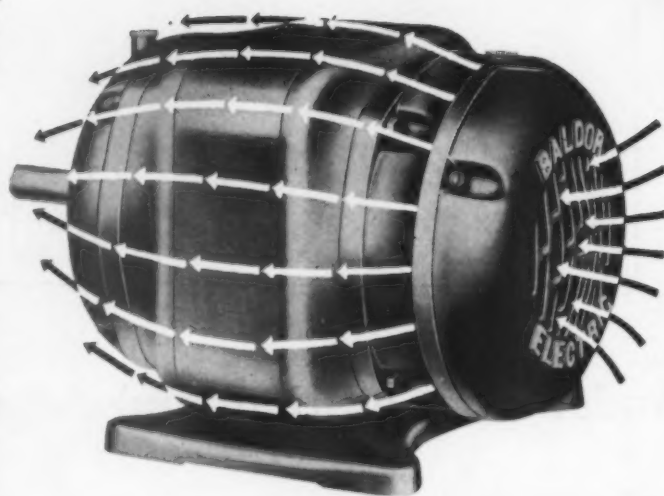

REG. U.S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

FREE! The neoprene notebook

Interesting stories . . . new, unusual applications and products of neoprene. Write E. I. du Pont de Nemours & Co. (Inc.), Rubber Chemicals Div. R-8, Wilmington 98, Delaware.



Glass Insulated BALL-BEARING MOTORS



BALDOR Glass-insulated Motors help in the war effort by conserving copper and other critical materials—without sacrificing quality or performance.

Glass-insulated motors provide more horse-power in smaller frame sizes.

They withstand high ambient temperatures and are not affected by moisture nor constant peak loads.

May we send you complete engineering data?

BALDOR ELECTRIC COMPANY

4353 DUNCAN AVE. • ST. LOUIS 10, MO.

Baldor

The Pioneer Manufacturer of
GLASS INSULATED MOTORS

SALES AND SERVICE IN OVER 300 TRADE CENTERS

(Continued from page 292)

We manufacturers have been expanding right along with you. To any company long associated with the electrical industry's expanding facilities, keeping pace with the industry's rapid growth is a normal part of doing business. Published figures are available for General Electric, Allis-Chalmers and Westinghouse, who are typical of the electrical manufacturing industry. In the last ten years, total sales of these companies have increased 300 per cent. They now have a total of about 200 plants—at least that was last week's count. Nearly half of them have been built since 1940, and more than 750 million dollars have been spent on these and older plants.

In production of generators, the country's manufacturers had the capacity to turn out approximately 3½ million kilowatts annually before World War II. Scheduled production is nearly 9 million kw for 1951 and 12 million kw for 1952. Electrical manufacturers also have capacity to build 47 million kva in power transformers, with similar increases for switchgear, condensers, motors, and many other things you need.

One favorable factor is the continued increase in average size of generators, transformers, breakers and other items. The average size of Westinghouse turbine generators, in ratings of 10,000 kw and larger, was 45,000 last year. It will be 48,000 this year, 57,000 next year, and 65,000 in 1953.

NPA Orders Should Be Followed

To the extent that I may speak for the manufacturers, let me assure you that we are extending ourselves to the limit. Certain metals, including copper, chromium, cobalt, nickel, and aluminum, are in tight supply. As about the seventh largest consumer of steel, the electrical manufacturers, have that problem, too. There are shortages of chemicals and such materials as resins, asbestos cloth, and rubber gaskets. Valuable time has been lost in labor disputes. We must follow the orders of the National Production Authority on the use of critical materials and in producing and delivering the apparatus you have ordered.

Our industry has been confronted with shortages of materials almost continuously for the past ten years. But the ingenuity of our purchasing, engineering, and manufacturing people has overcome these problems time and time again. They have done it by developing new sources of supply—new materials—by expanded use of substitute materials.

So, despite these complications, the electrical manufacturing industry, this year, will equal or exceed last year's production figures in most classes of power apparatus. It is our intention, not to meet production figures and schedules, but to better them. I want to go on record as saying—"Chart your growth, tell us what you need, and the electrical manufacturers will design, build, and deliver it."

(Please turn to page 300)



TORRINGTON
SPHERICAL
ROLLER
BEARINGS

riding herd on railroad cars

Whiting Corporation's amazing Trackmobile drives from the road right onto the tracks, where it spots, switches and hauls railway cars with ease. The Torrington Spherical Roller Bearings in the track axles deliver smooth, even power—unaffected by the heaviest loads.

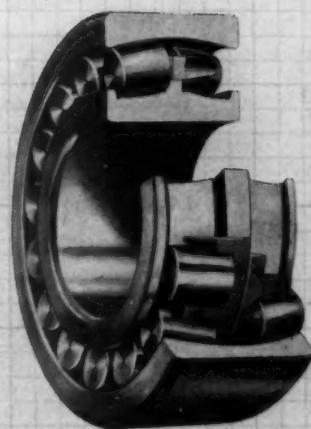
Self-aligning Spherical Roller Bearings absorb binding stresses despite long center distances or possible shaft deflection. A minimum of maintenance is required.

Your heavy-duty equipment can benefit from the automatic self-alignment and precision quality of Torrington Spherical Roller Bearings. Our engineers will be glad to help you work out details of design and application.

THE TORRINGTON COMPANY

South Bend 21, Ind. • Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada



TORRINGTON **SPHERICAL**
ROLLER **BEARINGS**

SPHERICAL ROLLER • TAPERED ROLLER • STRAIGHT ROLLER • BALL • NEEDLE • NEEDLE ROLLERS

Purchasing Magazine says:
WESTINGHOUSE effects
Tremendous Savings by
using



NUPLA HAMMERS
to replace
RAWHIDE

NUPLA HAMMERS
play important role
in \$7,500,000 cost
reduction program

These are the facts! Rawhide hammers had to be repaired on the average of twice a month. NUPLA HAMMERS, with replaceable plastic locked-in tip which could be replaced by hand on the job, maintained their original shape and usefulness from three to ten times as long as rawhide hammers.

HERE ARE THE
ACTUAL FIGURES
FOR ONE DEPART-
MENT ALONE

ANNUAL EXPENSE	
RAWHIDE HAMMER (including cost of repairs)	\$3400
PLASTIC HAMMER (including replaceable tips)	\$1291
SAVINGS	\$2109*

*See June Issue Purchasing, Page 113

On the basis of the above figures, rawhide hammers cost almost three times as much to use as plastic hammers. PURCHASING AGENTS: Start saving your company money now by ordering NUPLA HAMMERS.

NEW PLASTIC Corporation

1041 N. Orange Drive
Los Angeles 38, California

"AIR RECOVERY" FOR ROOM CONDITIONER

Although all the air in the space served by this 3-ton room conditioner is continually recirculated with no outside fresh air intake for ventilation, good air "quality", or freedom from odors, is provided by two activated carbon "air recovery" panels on the return air side of the unit.

The size of the office area is 9225 cubic feet and the conditioner, with a capacity of 1200 cubic feet of air per minute, changes the air 7.8 times an hour (60 min. x 1200 cu. ft. ÷ 9225 cu. ft., supplying each of the 10 occupants with the cooling effect of 120 cubic feet of air per minute.



The "air recovery" panels deodorize, or convert to fresh air, 240 cubic feet per minute of the already conditioned air. Hence ventilation at the rate of 24 cubic feet per minute is provided without bringing in new unconditioned air which would require a lengthy duct installation and increase in cooling capacity. At this air flow (1200 cfm) the panels' efficiency is 20 per cent and resistance is .14 water gage.

Air recovery panels consist of activated carbon-filled perforated metal tubes held in a rigid frame and are easily applied to unit conditioners. Complete information on the wide range of sizes, capacities and efficiencies may be obtained from the W. B. Connor Engineering Corp., Shelter Rock Lane, Danbury, Connecticut.

SUCCESSFULLY CONVERT COAL INTO SYNTHETIC OIL

Interior Secretary Chapman has announced the highly successful completion of another experimental run in converting coal into synthetic oil. The oil thus produced will now be made into high quality-octane gasoline, presumably for further testing by the armed forces.

In this latest run at the Bureau of Mines' demonstration plant at Louisiana, Missouri, 26 hundred tons of Kentucky coals were consumed. And nearly eight thousand barrels of oil were produced, or about three and three-fourths barrels (Please turn to page 302)

STEEL CASTINGS



ARE
YOU
GETTING
THIS?

In a nutshell—we publish "Atlantic Axioms" at intervals to better acquaint you with the advantages of steel castings in general . . . and in particular, how you may benefit from the service and facilities offered by Atlantic. Wouldn't you like to receive it? Just send us your name, address and business connection.



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Here's a way to add the latest data on new developments to your catalog and information files with a minimum of effort.

The Reader Service Department of Purchasing Magazine will obtain for you any of the new trade literature listed on page 19, 20, 22, 24 and 176 or additional facts on any of the products mentioned in the "New Products and Ideas" section, pages 128-172. Simply fill in the coupons on these pages indicating the numbers of the items on which you want literature or further information.

Check these pages now, mentioning month of issue, and send your request to:

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ROUND AND SHAPED TUBING

.010" to 1/2" O.D. Max.
Certain Analyses .035"
max. wall to 1 1/2" O.D.

Available in:

Carbon Steels:

A.I.S.I.—C-1008, MT-1010,
MT-1015, C-1118, MT-1020,
C-1025, C-1035, E-1095

Alloy Steels:

A.I.S.I.—4130, 4132, 4140,
4150, 8630, E-52100

Stainless Steels:

A.I.S.I.—303, 304, 305,
309, 310, 316, 317, 321,
347, 403, 410, 420, 430,
446, T-5

Nickel Alloys:

Nickel: "D Nickel",
"L Nickel", "Monel",
"K Monel", "Inconel",
30% Cupro Nickel,
18% Nickel Silver.

Beryllium Copper.
Reg. U.S. Trademark
International Nickel Company

Chapter 3

The Kink That Takes the Kinks Out of Tubing

In the machine above, a length of tubing is shooting through a row of teeth. It will emerge straight as an arrow—ready for any tough job tubing can do.

Why all this fuss? Because whether our customers use Superior tubing as tubing or thread it, flare it, bend it, flatten it, they want to start with a straight piece to avoid misalignment or poor machining at any stage of operation.

In short, when a customer gets small tubing from us he expects tubing that is mechanically perfect as well as dimensionally precise and metallurgically sound. And he gets it.

We have many ways of insuring adherence to superior standards in all three. Frequent sampling for chemical analysis and microscopic examination checks metallurgy. Close visual and instrumental inspection at every stage of handling insure dimensional precision and mechanical perfection.

Because of Defense Orders, shortages of metals and other conditions beyond our control, we may not be able to supply all of your requirements for fine, small tubing but it will pay you to specify Superior. Your distributor may be able to fill your order out of stock.

Superior Tube Company, 2034 Germantown Ave.,
Norristown, Pennsylvania.
West Coast: Pacific Tube Company, 5710 Smithway
St., Los Angeles 22, Calif. UNDERhill 0-1331.

Superior

THE BIG NAME IN SMALL TUBING

All analyses .010" to 1/2" O.D.
Certain analyses (.035" max. wall)
Up to 1 1/2" O.D.



DO YOU HAVE A PAPER PROBLEM-CHILD?

If you are using a paper that doesn't quite meet your needs — or need a type of paper not available — we'd like to offer our help. As specialists in combining unusual fibers to make papers with unusual characteristics, we may already have the solution to your problem. If not, our paper technicians may be able to develop *exactly* what you need.

It will pay you to check with our representatives *today!*



HOLLINGSWORTH & VOSE COMPANY
EAST WALPOLE, MASSACHUSETTS

MANUFACTURERS OF SPECIAL TECHNICAL & INDUSTRIAL PAPERS

M & V PAPERS INCLUDE: *Electrical Insulating • Abrasive Backing • Filter • Saturating • Gasket • Tag • Red Wallet • Wet Strength • Industrial Crepe, Black • Pattern • Coating Base Specialties*

(Continued from page 300)

of oil per ton of coal. The coal was donated for the tests by a group of co-operating Kentucky coal operators.

Secretary Chapman said this test helped to evolve several mechanical improvements and refinements in the coal-to-oil process.

The work of the Bureau of Mines and of an interested coal industry is rapidly making possible the economically feasible production of gasoline from coal. It is also making secure the nation's future supplies of liquid fuels. For versatile coal, which can assume many forms, is America's *one* abundant fuel resource.

1 1 1

STEEL STRIPS OF TRANSFORMER CORES BONDED WITH VINYLITE



New wound distribution transformer cores are made of steel strips bonded together with tough Vinylite resins to look and act like solid steel. Impregnating the core under vacuum pressure with a compound based on Vinylite resins, insulates core laminations from each other and reduces eddy current losses. Controlled hardness and toughness, and improved bonding strength result from the use of the resin in the core-impregnating compound. A strippable coating of vinyl chloride acetate resin is applied to the exposed faces of the core to prevent corrosion while in storage and to protect the core from weathering, mechanical abrasion and scuffing. Illustration shows hardened cores after annealing, impregnating, and baking to remove solvent, being cut apart into two U-shaped sections, at Sharon plant of the Westinghouse Electric Corporation.

1 1 1

URGE FUEL STOCKING DURING SUMMER MONTHS

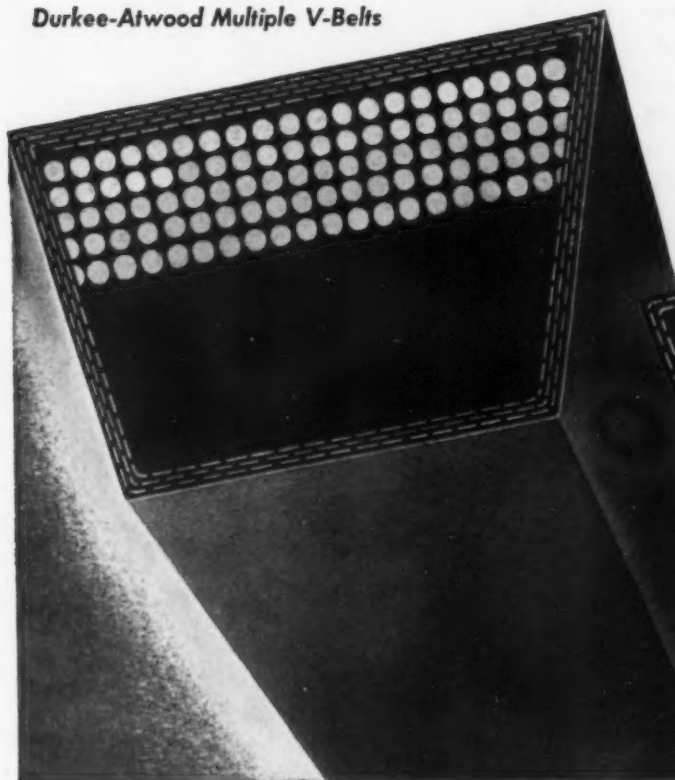
A voluntary program of fuel stockpiling by all types of consumers during the next 90 days would make a substantial contribution to the defense mobilization effort, Defense Mobilization Director Charles E. Wilson reports. It is very important that much of the heavy fuel traffic which is normally concentrated in this period be spread over the summer months. This will require the cooperation of Government agencies, home owners, and industrial consumers in placing orders early.

(Please turn to page 304)

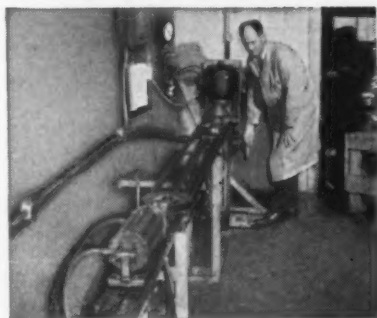
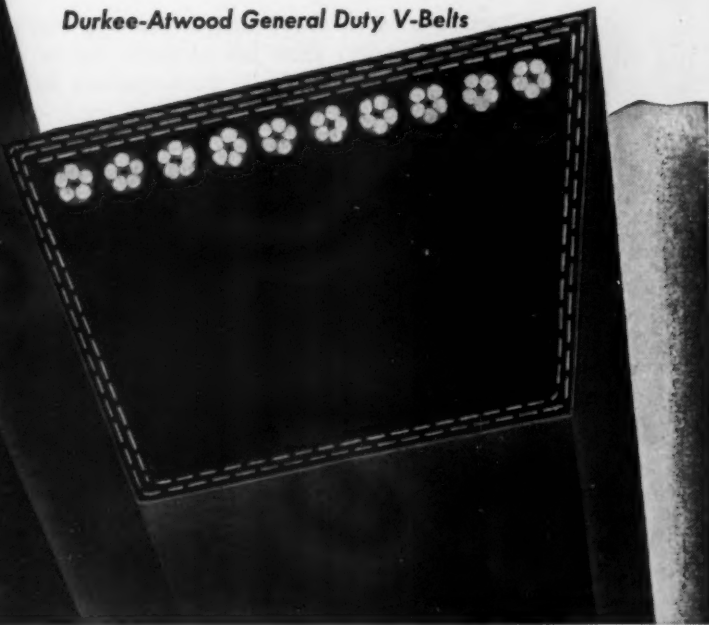
*Why more V-belt
users are looking to*

DURKEE ATWOOD

Durkee-Atwood Multiple V-Belts



Durkee-Atwood General Duty V-Belts



ISO-DYNAMIC MATCHING MAKES THE DIFFERENCE

Durkee-Atwood Multiple V-Belts are calibrated under varied tensions for different cross-sections up to a maximum of 450 lbs. per belt. This calibration of the true belt running length assures equal power transmission per strand on the multiple belt drive. Also—*iso-Dynamic Matching* detects any minute variation in cross-section, thus eliminating the major cause of vibration.

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DURKEE-ATWOOD CO., 215 N.E. 7th, DEPT. P-8, MINNEAPOLIS 13, MINN.

Form No. 513

● When orders pile up, when production is heavy—that's when you want dependable V-belt transmission . . . and that's when Durkee-Atwood quality pays dividends.

Right from the start, Durkee-Atwood V-Belts are built for high efficiency, low-cost power transmission. Only the finest rubber stocks are used. The load-carrying cords are made of specially treated rayon cords, much stronger than ordinary cotton cords. This extra strength means a greater safety factor for shock loads, high speeds and overloads. Every manufacturing process is carefully controlled . . . inspections every step of the way.

Durkee-Atwood's service policy is given the same attention. If you need a special non-standard V-belt for OEM requirements, D-A engineers will design and build the V-mold to your size specifications. Also, the D-A Distributor who calls on you is pledged to deliver fast, on-the-spot service when and where needed. And *all* service is important to him . . . a simple belt replacement or help in figuring V-belt requirements.

Add up these benefits and you, too, will see why more V-belt users are looking to Durkee-Atwood.

Buckeye

BRONZESMITHS



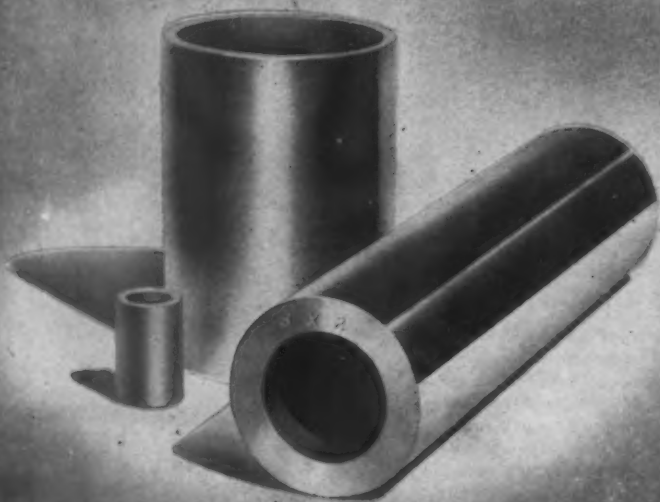
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50 Years

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Your nearest Buckeye Distributor is a recognized authority. From his adequate stocks of Buckeye Standard Stock Bushings and Fully Machined Maintenance Bars your needs can be served best. The Buckeye Brass and Manufacturing Company, 6410 Hawthorne Avenue, Cleveland 3, Ohio.



BARS • BEARINGS • BUSHINGS

ENGINEERING STANDARDS FOR MULTIPLE V-BELT DRIVES

The Rubber Manufacturers Association, Inc. and the Multiple V-Belt Drive & Mechanical Power Transmission Association announced the issuance of a sixteen (16) page manual of recommended "Engineering Standards for Multiple V-Belt Drives", as developed and approved by the technical committees of both associations.

It is expected that the new standards manual will be of material assistance to the thousands of users of Multiple V-Belt Drives. The data in the manual is based on the latest engineering opinion and research. The manual indicates the proper sheaves and belts to be used for the attainment of optimum efficiency and economy of the complete drive in relation to the particular duty required.

The standards may be obtained at a cost of \$1.00 for two (2) copies from either the Multiple V-Belt Drive Association, 7 West Madison Street, Chicago 2, Illinois, or The Rubber Manufacturers Association, Inc., 444 Madison Ave., New York 22, N. Y.

1 1 1

BOOKLET LISTS ADHESIVES, COATINGS AND SEALERS MEETING U. S. SPECS.

Adhesives, coatings and sealers that meet U. S. government specifications are listed in a new 10-page folder available from Minnesota Mining and Manufacturing Co.'s Adhesives and Coatings division, 411 Piquette Ave., Detroit, Mich.

The pocket-sized folder lists tested "M" brand compounds for over 30 federal, military, army, navy, and air force specifications.

Included in the listings are:

Adhesives for sealing caseliner and fibreboard boxes; for bonding synthetic rubber to metal, and linoleum to floors; for installing various insulation materials; for tent manufacture, and for general-duty use; and adhesives resistant to special conditions such as the presence of oil and aviation fuels;

Coatings for sound deadening, for aircraft walkways, and for label overcoating; and

Sealers for aircraft fuel tanks and pressure cabins and for gas mask filters, boat deck seams, and underground storage tanks.

1 1 1

SUPPLIES FOR USERS OF SMALL QUANTITIES OF CONTROLLED MATERIALS

Manufacturers whose operations fall under the Controlled Materials Plan but who use only small quantities of steel, copper and aluminum in their production, are provided with a simple method of obtaining needed supplies of the three basic metals, without application to the Government, in Direction 1 to CMP Regulation, issued by the National Production Authority.

(Please turn to page 306)



Living dangerously...carefully

It's a rough and rugged life . . . commercial fishing. Often dangerous too. But fishermen have a keen respect for the hazards of their trade . . . take no unneeded risks. They're ready for what may come . . . whenever it comes. On thousands of fishing craft and other ocean vessels, Exide Batteries contribute to safety by providing dependable power for radio, engine cranking, running lights, navigating instruments and emergency services.

Where dependability is vital, you'll find Exide Batteries. They supply motive power for battery electric industrial trucks, mine locomotives

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BATTERIES

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and shuttle cars. On railroads, Exide Batteries are used to crank the big diesel locomotives, to supply power for car lighting, air-conditioning, and signal systems. Telephone and telegraph companies, radio and television stations and electric utilities rely on Exide Batteries for many essential services.

And on millions of cars, trucks, buses and tractors, there is daily proof that "When it's an Exide, you start."

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THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 2 • Exide Batteries of Canada, Limited, Toronto

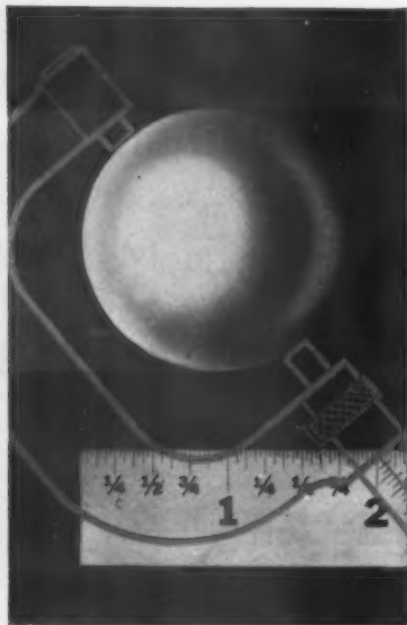
AUGUST, 1951

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305

ONLY A BALL

has { one dimension
one surface



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Important not only in precision ball bearings, but also in the lot of other applications where Strom metal balls have been doing the job better. Strom has been in on a great many ball-application problems, and knows how important these two factors are for the best results.

Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.

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STEEL BALL CO.
1850 South 54th Avenue
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Largest Independent and Exclusive
Metal Ball Manufacturer

CMP ACCOUNTING EXPLAINED IN NEW 18-PAGE MANUAL

"Allotment Accounting for Consumers under CMP," an 18-page manual explaining what records manufacturers receiving allotments of controlled materials must establish and maintain, was issued this week by the National Production Authority.

The manual covers a range of conditions likely to arise in the handling and use of controlled materials and explains, step by step, what the manufacturer must do to account for the materials in each instance.

Charts are used to illustrate various examples.

The manual states that every company receiving an allotment of controlled materials must keep records which show (a) the material being accounted for, (b) identifying program information, (c) the unit of measure, (d) the calendar quarter for which valid, (e) quantities received, (f) quantities reallocated to other consumers, (g) quantities ordered directly from suppliers, (h) the allotment balance available, and, (i) dates and posting references.

No particular forms are specified for use in keeping these records.

Records which must be kept to account for non-controlled materials which the manufacturer may acquire by use of a preference rating are not covered in the manual.

Copies of "Allotment Accounting for Consumers under CMP" may be obtained from the National Production Authority, U. S. Department of Commerce, Washington 25, D. C., and will shortly be available in the Department's field offices.

1 1 1

BOOKLET ON TECHNICAL DEVELOPMENTS IN CAST-WELD CONSTRUCTION

Valuable data on technical developments in the field of cast-weld construction, citing numerous examples of impressive metals conservation, production economies, improvements in functional design, and other engineering gains, is being made available in booklet form by Steel Founders' Society of America.

Based on detailed technical papers presented at the Society's national Technical and Operating Conference, the booklet comprises a reprint outlining numerous practical examples of leading steel foundries' effective application of proven cast-weld techniques.

Including 16 illustrations typical of product engineering gains discussed in the various papers, the text runs to nine pages and incorporates detailed information on improved cast-weld principles and related redesign considerations.

Copies may be obtained by writing to F. Kermit Donaldson, executive vice president, Steel Founders' Society of America, 920 Midland Building, Cleveland 15, Ohio.

(Please turn to page 308)

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**DEFENSE
CONTRACTS**

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- ASSEMBLIES

**PRECISION MADE
IN ANY
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experience to
work for you . . .

Let Steinen engineering "know-how" and the experience of over 40 years in serving outstanding American manufacturers help you now.

Steinen offers its extensive facilities—modern, high speed machine tools, production methods and technical skill in making and assembling screw machine products and stampings in all metals. We produced many important quality items in enormous quantities for the last war. We are better equipped than ever in meeting defense contracts.

We invite your inquiries—whether for a hundred, a thousand or a million units.

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Fairfield Conn.



"Well, for one thing, it leaks."

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SPONGEX Stops Leaks...

...also noise, shock, dust, vibration and air.

This test driver reports his tank in need of a moisture-proof seal.

Spongex cellular rubber will do the trick and keep *doing* the trick after endlessly repeated slammings... after oil has failed to soften it and temperatures fluctuating over a wide range have failed to stiffen it.

It will be fire resistant and have excellent aging properties.

It will meet Federal Specifications MIL-C-3133 & MIL-R-6130.

This tank might even be lined with *Spongex Plastic*, expanded polyvinyl chloride yielding outstanding insulation value (0.20 to 0.25 K factor) and possessing excellent crash pad properties. Also oil and fire resistant.



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AUGUST, 1951

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307

SAVE ON PARTS AND MATERIALS

**THIS FREE
DISSTON BOOK
TELLS YOU HOW!**



This new Disston guide—sent FREE on request—is a "must" reference book for every production-minded cost-conscious engineer, designer, and purchasing man. In 16 fact-packed illustrated pages it gives you the story of Disston Custom Steel Parts: what they are; how they are made; typical products; how to order. And, of prime importance, this book blue-prints the facilities of the Disston Custom Parts Plant for handling intricate designs, exacting tolerances, and special heat treating . . . to individual specifications. We'll gladly send your copy on request—write on your letterhead or use the coupon.



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Steel mills urgently need more scrap now! Help yourself get more steel by keeping your scrap moving into channels serving steel mills.

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A. S. METHODS OF MEASURING AND SPECIFYING COLOR

Representatives of the Government, consumer interests, and industries interested in color specification—textile, film, telephone, glass, electric, radio, motion picture, pulp and paper and optical—have developed three American Standard methods of measuring and specifying color, viz:

American Standard Method of Spectrophotometric Measurement of Color, Z58.7.1-1951;

American Standard Method for Determination of Color Specifications, Z58.7.2-1951;

American Standard Alternative Methods for Expressing Color Specifications, Z58.7.3-1951.

According to Dr. David L. MacAdam of the Eastman Kodak Co., chairman of subcommittee 7 of the ASA Sectional Committee Z58 on Optics that developed the Standards, hundreds of "color standards" are in use in commerce and industry. Usually each represents a desired color with which product samples are compared. Sometimes "Tolerance colors" are used to bracket the desired color. Thus, a certain yellow carton color is specified between four tolerance limits, indicating how red or how green the yellow may be, and how light and how dark. These tolerance samples and "color standards", he said, should perhaps be regarded as gages rather than standards. There is little to be gained by standardizing gages, each of which is of use only in specific applications, often confined to a single product of a single manufacturer, and subject to frequent changes with fashions.

It is much more important to standardize methods for measuring the color of such gages, he continued. Material samples, especially when handled frequently in making comparisons with products, become soiled, faded, damaged, and lost. It is important to measure and record their original colors in some unambiguous, communicable way so that equivalent new inspection "standards" or "tolerances" can be selected even after the passage of years. This is the intent of the three new American Standards on methods of measuring and specifying color.

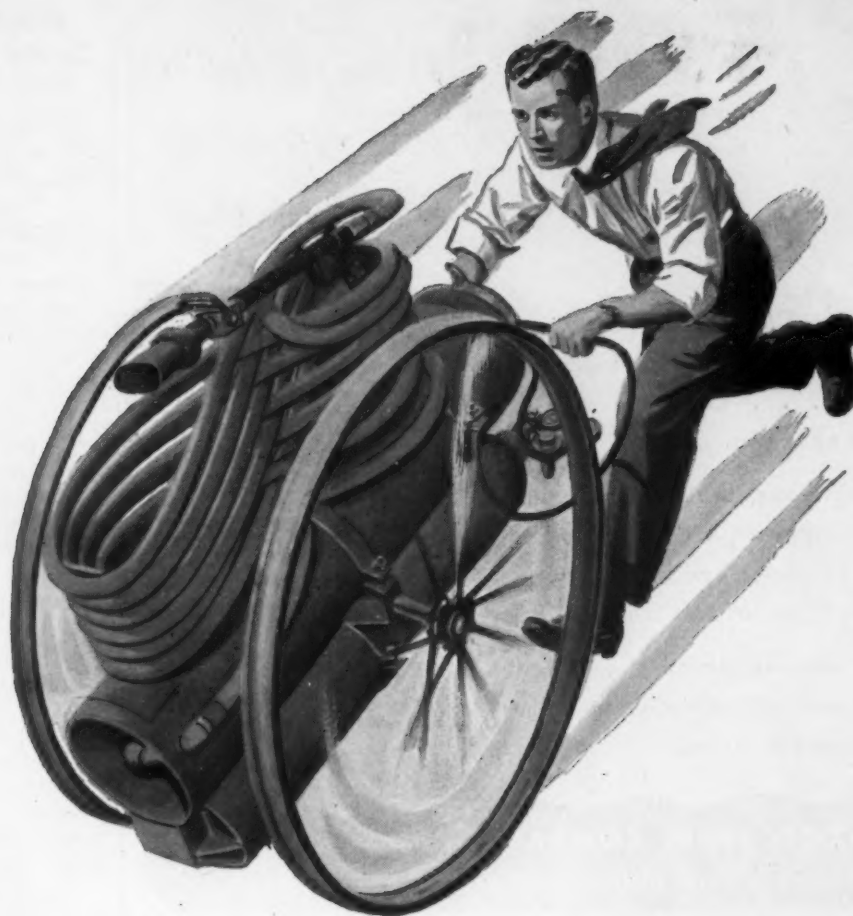
The standards incorporate the specifications and methods for spectrophotometric measurement of color, for determination of color, and for expressing color. They supersede the American War Standard Specification and Description of Color Z44-1942, and were sponsored by the Optical Society of America under the procedures of A.S.A.

Further information about the standards is available from the American Standards Association, Inc., 70 East 45th Street, New York, N. Y.



USE FIELD OFFICES

Businessmen will save time and effort if they take their questions and problems on defense production to the nearest field office of the U. S. Department of Commerce rather than writing or visiting Washington.



A ONE MAN "FIRE ENGINE"

—the Kidde Dry Chemical Wheeled Extinguisher

You *can* control a roaring fire in inflammable liquids, live electrical equipment, textiles or L-P gas. The Kidde 150 Pound Dry Chemical Wheeled Extinguisher packs a fire-fighting wallop that brings large fires under control quickly and easily.

The new "instant flow" hand control enables you to beat back fire with a long range "straight" stream... or to blanket the fire completely by

the wider coverage which you get from the improved "fan" pattern.

One man can wheel this extinguisher through a standard doorway... apply 150 pounds of fire-smothering dry chemical in less than one minute.

Write for complete information on this new Kidde Dry Chemical Wheeled Extinguisher... or the full line of Kidde fire extinguishers and built-in systems.

Kidde

Walter Kidde & Company, Inc., 847 Main Street, Belleville 9, N. J.

Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.



TOPS in Both Eye and Price Appeal — KALAMAZOO LABELS

SPECIALISTS in paper labels of all kinds for over 45 years . . . that's the type of experience we offer you.

Yes, whatever your requirements, it will pay you to consult with us . . . pay you to discover the EYE appeal and PRICE appeal of Kalamazoo air conditioned labels!

Quotations, samples, design suggestions —all without any obligation on your part. Your inquiry is invited.

● AUTOMATIC CONTROL SAVES!

We operate a completely air conditioned plant. This means high speed, high quality production without the extravagance of spoilage. Our quotations always reflect this manufacturing economy.

● SOURCE-BUYING SAVES!

Located, as we are, in the heart of the paper industry is one of the many other reasons why a proposition from Kalamazoo Label is invariably attractive.

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Informative, illustrated booklet describes label production in a modern, fully air conditioned plant. Send for your free copy today!



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Exclusive Label Manufacturers Since 1906

...make gloves last
3 to 5 times LONGER!

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LEATHER

RUBBER OR COTTON

How
Much Will
This Reduce
Your Yearly
GLOVE
Cost?



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THIS IS WHAT "WASH-RITE" DOES...

Throw all your dirty, worn leather, rubber or cotton gloves in our steel drum. Ship to us. We correctly clean, sterilize, COMPLETELY REPAIR, sort, reshape, pair and ship them back to you as serviceable as new. Depending upon the gloves and their usage, gloves are being re-claimed by us 3 to 5 times. We specialize only in laboratory controlled re-claiming of rubber, leather and cotton gloves, aprons and clothing. Write for literature.

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SEND US A
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Wash-Rite Company, Inc.

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Handling Materials to Serve Quadrupled Production Program

(Continued from page 87)

cartons which, in turn, are loaded on pallets. These unit loads are then removed with a 1500-pound truck to shipping storage.

Although the 1500-pound capacity truck is used chiefly in the shipping storage department, it is called on many times during the day to transport the lighter loads of raw material to the production machines. In fact, the reason certain pallet loads are made up to weigh 1200 pounds is to permit the use of this smaller truck in those departments having narrow aisles. The most important of these served with raw material by the smaller truck is the bag department where such items as cellophane and other plastic film bags are produced. Considerable dependence is placed on the fork truck to keep the machines in steady production by supplying the raw material as it is required.

The finished bags are packed into cartons and placed on a belt conveyor which delivers them overhead to the shipping storage department, nearly the full length of the plant. Here, the cartons move onto a gravity roller conveyor which brings them to the stapling machine and then to the labeling station at which point they are routed, according to shipping destination, to the proper spur.

The cartons are palletized and the 1500-pound truck tiers the loads in storage. When the material is to be shipped, the fork truck removes it from storage and delivers it to the highway trucks where the pallets are unloaded. However, there are instances when the customer requests that the material be shipped from Dobeckmun in unit loads on disposable pallets.

Benefits realized with this fork truck-pallet system are:

- (1) Time for movement of stock has been drastically reduced.
- (2) High tiering with the plant trucks has tripled available storage without increase of floor space.
- (3) Faster and easier inventory control was made possible with high tiering of stock.
- (4) Material movement has been increased without increase in man-hours.

We feel, certainly, that our present efficient and high speed production could never have been achieved without this efficient materials handling system.

(Please turn to page 312)

METAL HOSE
at work!



or an asphalt
hose...



... or dust collectors



it's all CMH

REX-TUBE

flexible metal hose!

THREE photos can only begin to show the uses for CMH REX-TUBE Flexible Metal Hose... and for a good reason. Standard REX-TUBE is made in nine basic types in galvanized steel, stainless steel, brass, aluminum and other alloys... in sizes from $\frac{5}{32}$ " to 12", I.D. Here, from one source, you can fill virtually all your needs for convoluted metal hose for low to moderate pressures.

CMH Distributors located in principal centers will be pleased to give you full information. See your classified telephone directory or write for the name of the distributor nearest you.

CHICAGO METAL HOSE Corporation

1310 S. Third Ave. • Maywood, Ill. • Plants at Maywood, Elgin, Rock Falls, and Savanna, Ill.
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Flexon identifies
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ONE DEPENDABLE SOURCE
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Convoluted and Corrugated Flexible Metal Hose in a Variety of Metals • Expansion Joints for Piping Systems
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Solid, hard or sponge rubber parts molded to customers specifications from natural, synthetic and reclaimed rubber

Davidson RUBBER COMPANY

BRIGHTON STREET Department 4 BOSTON 29, MASS.

Handling Materials to Serve Quadrupled Production Program

(Continued from page 310)

ding plan. Our trucks are in operation during the two working shifts. Four batteries are available for the two 3,000-pound trucks. These are charged and changed for each shift. The 1500-pound truck, which is used only intermittently during the 16 hours, requires only one battery. This is charged during the off hours.

♦ ♦ ♦

How Tax Laws Affect Purchasers

(Continued from page 127)

bell Soup Company took an order from the Stuart Grocery Company in Nashville, Arkansas. Also, the salesman took orders from other purchasers in Arkansas. These orders were forwarded by the salesman to the home office of the Campbell Soup Company in New Jersey for acceptance or rejection. Upon acceptance of any order by the Campbell Company at its home office the shipments were packed and marked for the respective purchaser. The shipments were made in carload lots to the Hunter Transfer Company at Texarkana, Arkansas. The latter company opened the car and then sent the various purchasers their shipments from the railroad car. In short, the Hunter Transfer Company broke the shipment to less-than-carload lots—all of which was evidently a freight saving device.

It was contended that the Campbell Soup Company was "doing business" in Arkansas, and therefore subject to taxation and other laws of this state.

The higher court refused to agree, saying that where a foreign corporation accumulates several shipments into one carload shipment and an agent of the corporation distributes the individual shipments to the various purchasers, such shipments are interstate commerce and does not constitute "doing business" in Arkansas by the foreign corporation.

For comparison see *Peter Corporation v. Division of Tax Appeals*, 59 Atl. (2d) 716. The State of New York sued the Peter Corporation for \$16,666.79, representing assessments, interest and penalties from the sale of its products within the state. The company's counsel contended it was not liable

(Please turn to page 314)



in **WIRE ROPE**, too

It's all in the RIGHT KIND of Muscle

The powerful, rugged muscles of a charging rhino enable him to propel his tremendous bulk and weight at truly remarkable speed. Nature designed them well for the purpose they have to serve.

In wire rope, too, the right kind of muscle is vitally important... because different types of jobs present different types of destructive forces. Bending fatigue! Shock stress! Abrasion! Load strain! Each demands wire rope that best combines the required resistance characteristics.

Wickwire Rope gives you the benefit of long experience and specialized know-how which assures you of exactly the right kind of rope your particular job demands.

For additional information write or phone our nearest sales office.



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PACIFIC COAST: THE CALIFORNIA WIRE CLOTH CORP.—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane

WICKWIRE ROPE



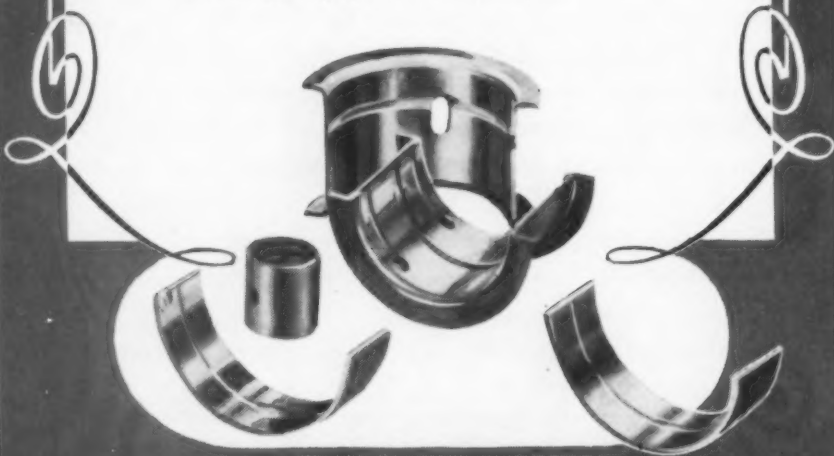
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HORSEPOWER Today— Not Horses

NEVER BEFORE in the history of the world has such power been available. Present day automotive engineering is producing means of transport of great capacity, speed and roadability. Hand in hand, Johnson Engineers have constantly improved and devised sleeve bearings to meet these greater demands. Much of today's greater power is paralleled by the 50 year's progress in Sleeve Bearings by Johnson Bronze.



SLEEVE BEARING HEADQUARTERS Since 1901



Johnson Bronze

450 SOUTH MILL STREET • NEW CASTLE, PA.

How Tax Laws Affect Purchasers

(Continued from page 312)

because the merchandise was shipped to customers outside the state.

The testimony showed that the T. and D. Company is composed of officers, stockholders or employees of the Peter Company. When the T. and D. Company received orders for merchandise from out-of-state customers, it would order the merchandise from the Peter Company. The merchandise would then be loaded on railroad cars and the bill of lading was delivered to the T. and D. Company which would endorse it and forward it with the sight draft to the customers or purchasers.

The higher court held that these sales of merchandise by the Peter Company to the T. and D. Company were *within* the state, and not exempt from *excise* state taxes.

This court said that the T. and D. Company made non-taxable interstate shipments of the merchandise but the sales by the Peter Company to the T. and D. Company were "intrastate" and therefore taxable under the state's taxation laws.

This was so although the transactions between the Peter Company and the T. and D. Company were intended to "further" interstate sales to customers outside the state. Quite obviously, if the orders from customers outside the state had been sent directly to the Peter Company and the latter company had made the shipments to such customers, the transactions would have been purely interstate. However, since the Peter Company billed the merchandise to the T. and D. Company, which made the shipments to out-of-state customers, the transactions between the Peter Company and the T. and D. Company were intrastate. The court held so although both the Peter Company and the T. and D. Company were operated by the same officers and the stockholders were the same in both companies.

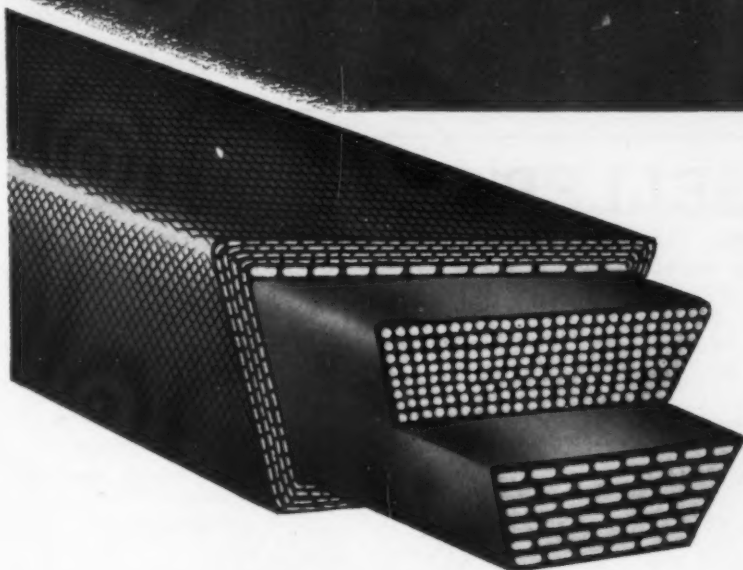
LOW TEMPERATURE WELDING ALLOYS CHART

New edition of folder No. 246-P containing specifications on nearly 100 different low temperature welding alloys used in welding, brazing and hard surfacing of steel, alloy steels, stainless, cast iron, brass, bronze, copper, aluminum, magnesium, zinc die cast, etc., is available from the Eutectic Welding Alloys Corp., 172nd St. & Northern Blvd., Flushing, N. Y.

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*This ¶ in our V-Belt ads
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June 1st stocks are 67 per cent greater than on the same date a year ago, and 3.8 per cent higher than on May 1 of this year. Both retail and industrial stocks showed a gain on June 1 over the previous month of 3.6 and 0.19 per cent, respectively. Compared with June 1, 1950, current industrial stocks are higher by 70.7 per cent, while retail dealer stockpiles are less by 13.1 per cent.

Bituminous coal consumption in May dipped to 33,737,000 net tons, as compared with 36,031,000 the previous month, and 34,031,000 in May, 1950. Retail dealer deliveries dropped 34.4 and 27.4 per cent, respectively, while industrial consumption fell 2 per cent under April, 1951, but showed a gain of 3.1 per cent over May of 1950.

As of June 1, there was enough bituminous coal on hand to last 69 days at the current rate of consumption, with electric power utilities topping the field with 121 days' supply. On June 1, 1950, there was a 41 days' supply and on May 1, 1951, a 60 days' supply.

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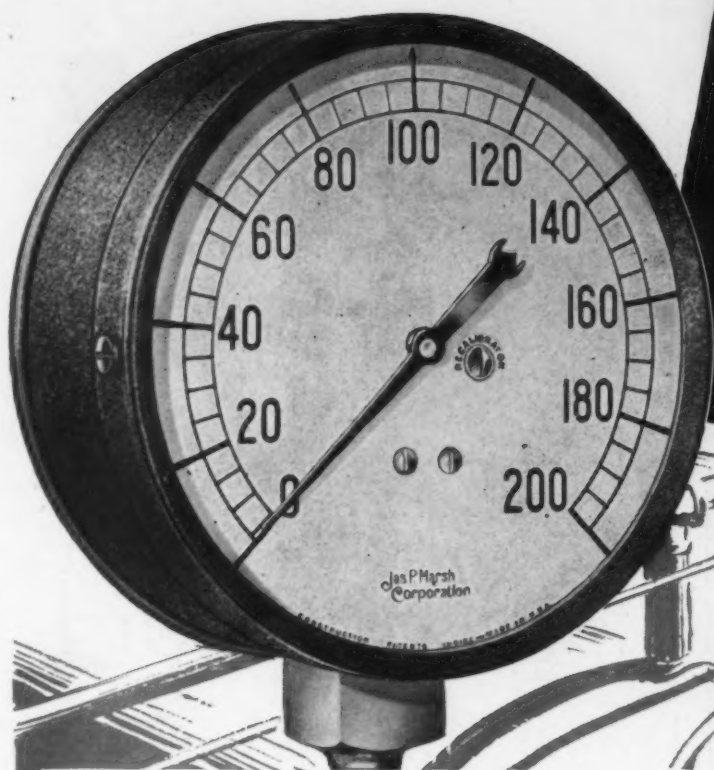
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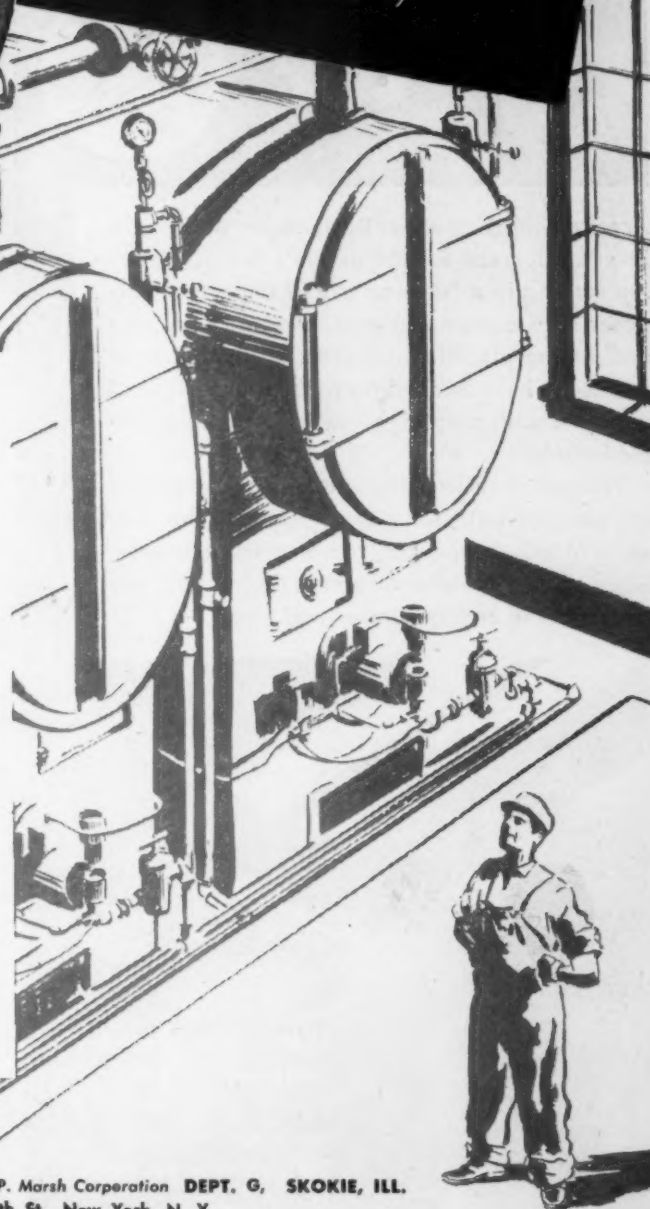
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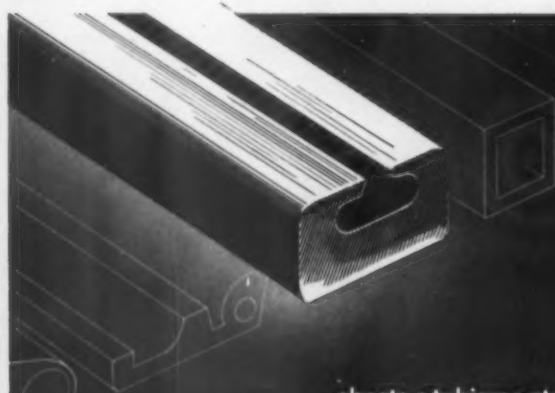
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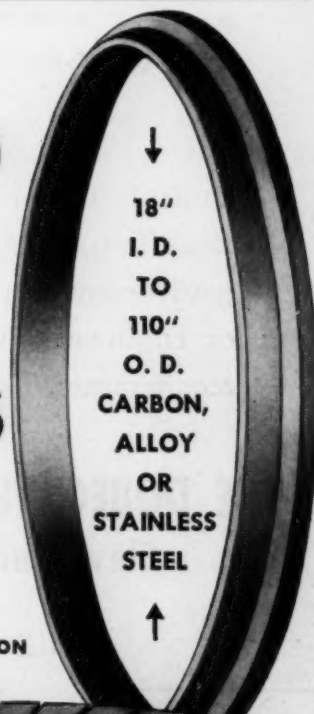
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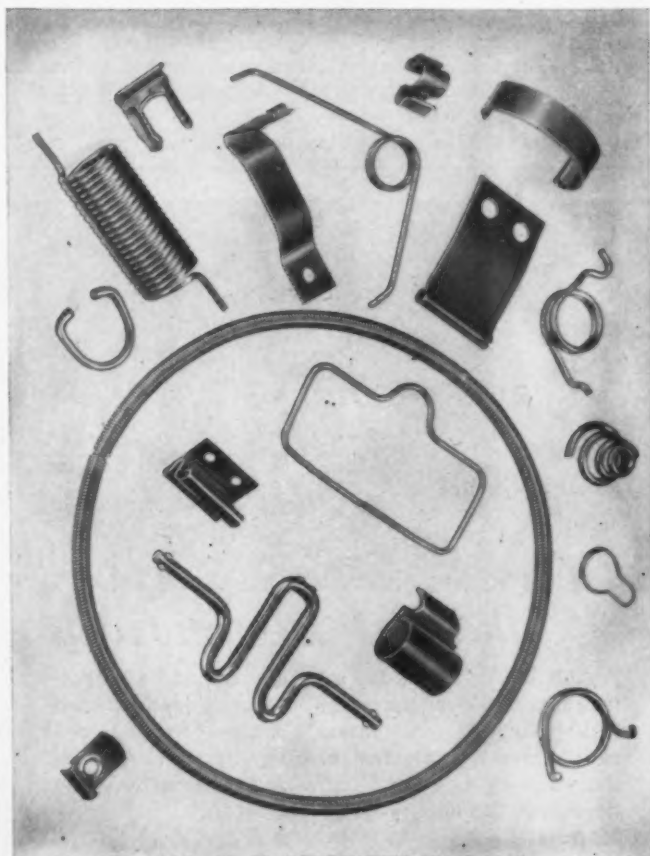
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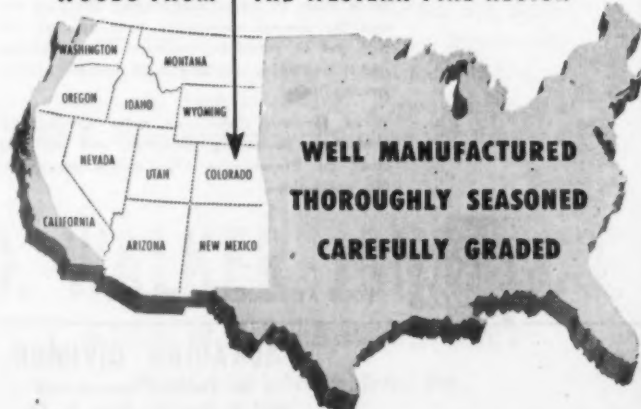
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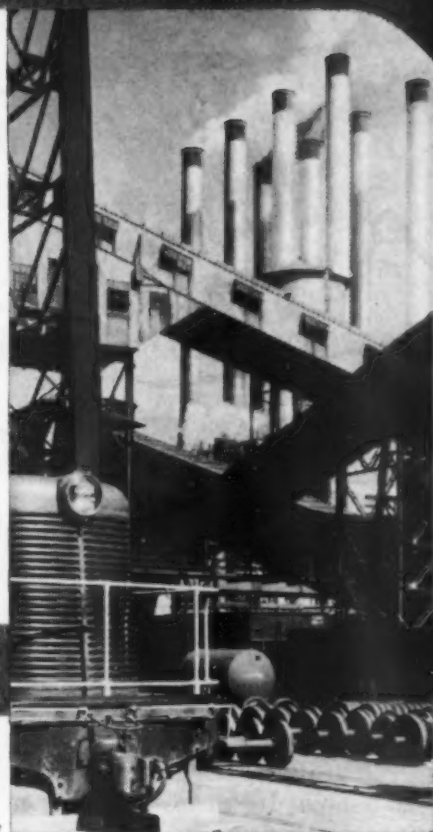
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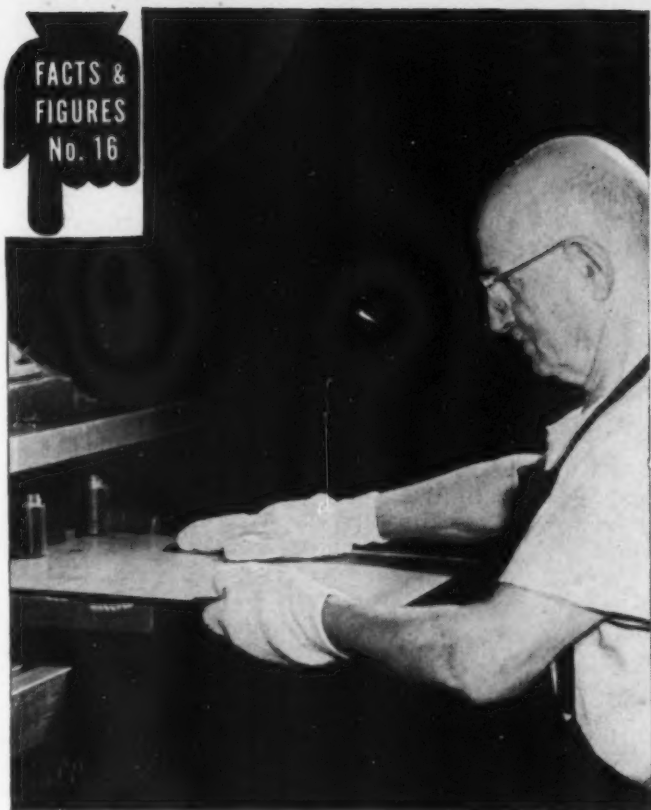
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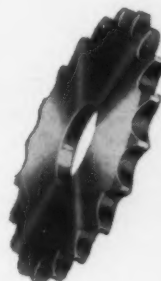
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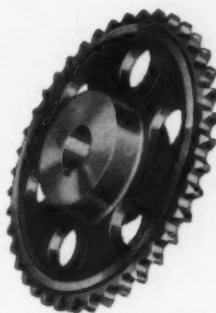
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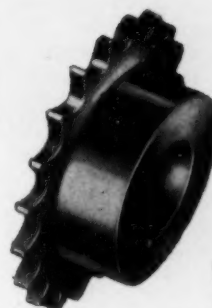


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Type C cast iron
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LETTERS . . .

NPA USES CMP CHART

You may be interested to learn that copies of the CMP chart from your June issue have been distributed to all key personnel in both National Production Authority and the Defense Production Administration and to each of our more than 100 field offices. In fact, I have one pasted on my wall which brings many favorable comments from visitors to the office. You may be sure that the chart fills a definite need in our organization.

In my opinion, PURCHASING Magazine has done an outstanding job of keeping purchasing agents informed on the purposes and procedures of NPA and is rendering a valuable service in the mobilization effort a vital link between the government's defense program and the purchasing agent who is the key figure in activating our defense industry. May I commend both you and Mr. Weckler of your Washington office on an excellent job.

Albert J. Lubin
Deputy Dir. of Information
National Production Authority
Washington, D. C.

- PURCHASING is gratified to be of service in national mobilization, and particularly at having charted the government program for the benefit of those in charge.

SUPPLIERS WANTED

Are there any individuals or organizations that specialize in finding other than the usual sources of supply? We sell servicing instruments, and have ideas for several testing instruments other than those commonly found on the market. We know the established manufacturers of electronic testing instruments are loaded to the gills with defense orders. We also know there are concerns—some of them young, up-and-coming outfits—that would welcome an additional \$30,000 to \$40,000 a year revenue, that are perfectly capable of manufacturing what we have in mind. The problem is to find concerns of that nature.

E. L. Degener, Gen. Mgr.
National Radio Institute
Washington, D. C.

- Perhaps some qualified individual, with engineering and purchasing experience, may see this and be able to help our inquiring reader. As a start, we would suggest contacting the Association of Electronic Parts and Equipment Manufacturers, 33 N. LaSalle St.,

Chicago, and the National Electronic Distributors Association, 221 N. LaSalle St., Chicago, for possible reference to one or more member companies that might be in a position to take on such work. The classified advertising sections of large metropolitan and business newspapers are also widely used to establish such contacts, regularly maintaining sections for "Materials Wanted" as well as for more conventional selling purposes.

SOURCES FOR A/N PARTS

Please advise me if there is available a list of A/N parts suppliers for nuts, screws, bolts, washers, fittings, etc., for the defense effort. Lists of this type were available during World War II and I would appreciate any information you could forward me regarding a new list.

L. R. Greenlaw, Pur. Agt.
Hedstrom Union Co.
Fitchburg, Mass.

- We have not yet been advised of any official current listing of this sort. Best suggestion at this time is to contact the NPA Field Office for your district (as listed on the CMP chart in our June issue) and the Industrial Fasteners Institute (formerly American Institute of Bolt, Nut, and Rivet Manufacturers), Hanna Building, Cleveland, Ohio.—Ed.

WHERE WE STAND

Each month you publish a graph entitled "The Price Picture". This gives a price index of several commodity classifications among which is one for "Metals and Metal Products". We are interested in finding a regularly published "Metals and Metal Products" price index applicable to our requirements for the preparation of plant maintenance budgets.

In regard to the index referred to we would like to know (1) what factors are used to determine the index, and (2) will "The Price Picture" remain a permanent and regularly published feature in PURCHASING?

Walter Simon, Maint. Supt.
Pabco Products, Inc.
Emeryville, California

- The index for metals and metal products which appears in our "Price Picture" graph is supplied by the Bureau of Labor Statistics of the U. S. Department of Labor.

The components of this general group include: agricultural machinery and equipment, iron and steel, motor vehicles, non-ferrous metals, plumbing and heating. These are wholesale data, representing for the most part prices in primary markets. In general, BLS says, the prices are those charged by manufacturers or producers, or are those prevailing on the commodity exchanges. The monthly index is calculated from a monthly average of one-day-a-week prices.

It is our intention to continue publishing this information as long as it is available from reliable sources.

HOW MANY BUYERS?

We are anxious to obtain data relative to personnel employed in purchasing departments, with relation to volume of purchases—how many employees in a department purchasing up to \$250,000 per month, how many in a department doing up to \$500,000, etc. Any information along this line, especially applying to mining operations rather than manufacturing companies, would be most valuable. We would also appreciate the same information with reference to warehousing or storekeeping.

D. P. McLaulin, Pur. Agt.
American Cyanamid Company
Brewster, Florida

- The best information we have on this subject is contained in a questionnaire survey published in our issue of August, 1944. The results of that survey showed the following average staff in various brackets:

Annual Volume of Purchases	Purchasing Personnel Single Plant	Multi-Plant
Up to \$½ million	3.5	3.9
\$½ to \$1 million	5.2	9.
\$1 to \$5 million	8.	9.9
\$5 million and over	13.3	28.6

Most of the companies represented in this survey were manufacturing companies. It was not broken down by type of operation. The information is not very specific and there was no pattern of close correlation between size of department and volume of purchases, but it may be of some value as a rough check. We do not have information on personnel in storekeeping operations.

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FLAT HEAD SOCKET CAP SCREWS • STRIPPER BOLTS • PIPE PLUGS • HEX KEYS



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The New
P-K Socket Screw Dimension Finder

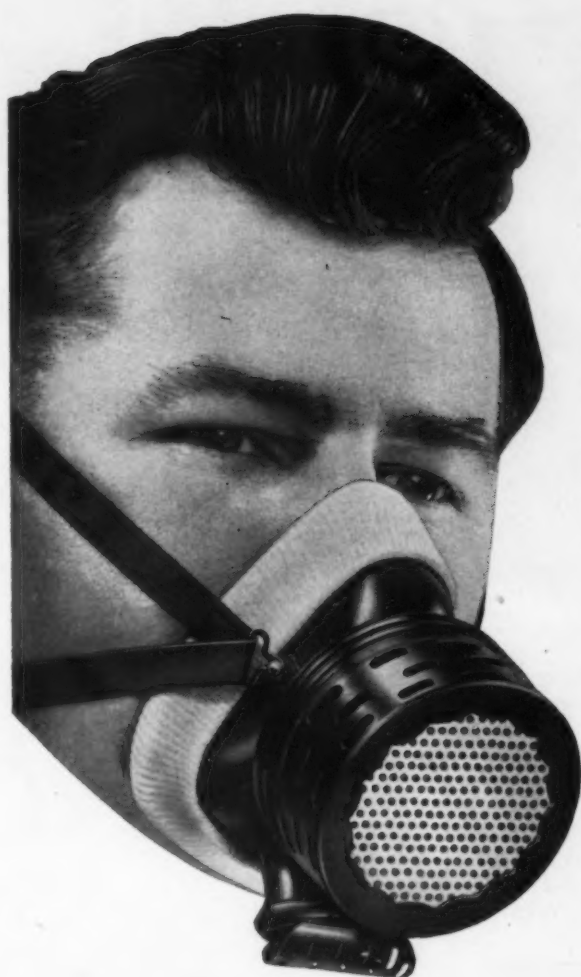
A pocket-size plastic slide chart gives you all essential dimensions of P-K Socket Cap Screws, Set Screws, Flat Head Socket Cap Screws, Stripper Bolts, and Pipe Plugs. Includes Set Screw Point Dimensions, and Thread Length Formula. Available, **FREE** from your P-K Distributor.

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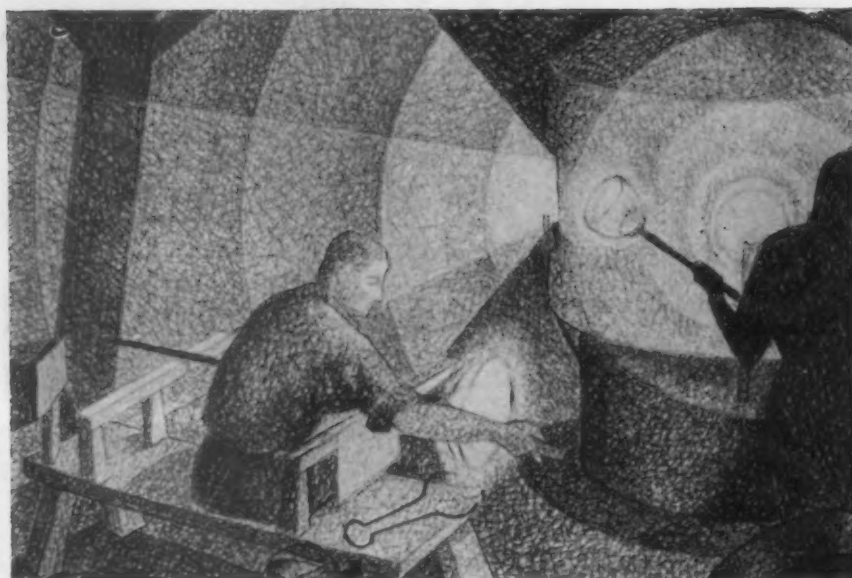
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Caster Quiz

Some interesting facts on caster construction which are important in reducing materials handling costs, the "Reducible 30%."*



Q Why are *fully-hardened* bearing raceways important in swivel casters?

A Ball races in swivel casters take a pounding . . . and the caster without properly hardened ball races will soon lose its ease of swiveling.

Q Are there different qualities or degrees of hardness in caster ball raceways?

A Most certainly. Everything from a very thin flash to a deep hardening.

Q How can the buyer of casters tell the difference?

A He cannot without actual testing. The quality of hardness is not apparent to the eye . . . but it is a very important unseen quality.

Q What hardening process is used in producing Bassick "fully-hardened" raceways?

A Leeds & Northrup "Homocarb" furnaces . . . the same as used on aircraft engine parts . . . the highest quality process known . . . with electric controls which insure uniform high-quality hardness . . . one of the important unseen features which makes Bassick casters last longer!

Q Do all distributors handle Bassick casters?

A No! The Bassick Company carefully selects its distributors, works closely with them in making recommendations to meet your specific needs. In most major cities you'll find your Bassick distributor listed in the classified phone directory.



THE BASSICK COMPANY, Bridgeport 2, Conn. Division of Stewart-Warner Corp. In Canada: Bassick Division, Stewart-Warner-Alemite Corp., Ltd., Belleville, Ont.

*According to cost analysts, materials-handling (about 30% of total cost) affords about the only real opportunities for cost reduction today.



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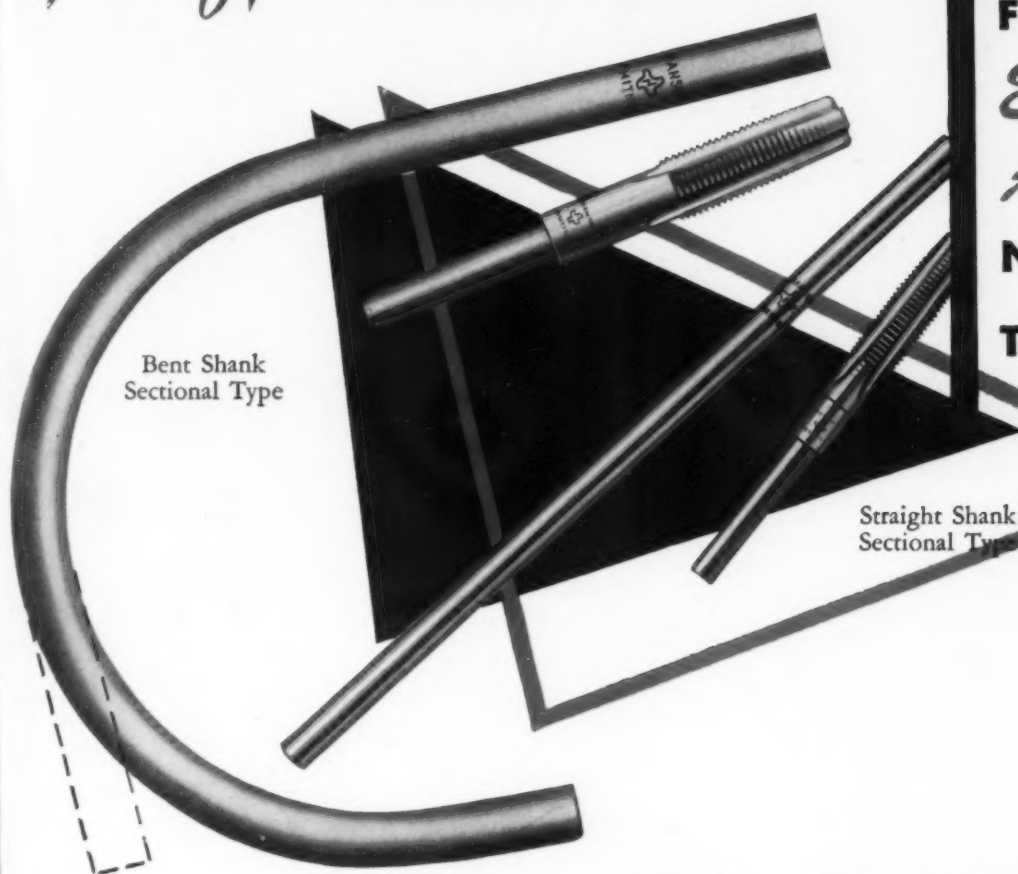
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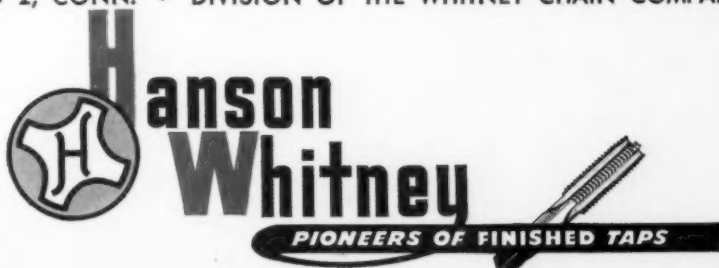


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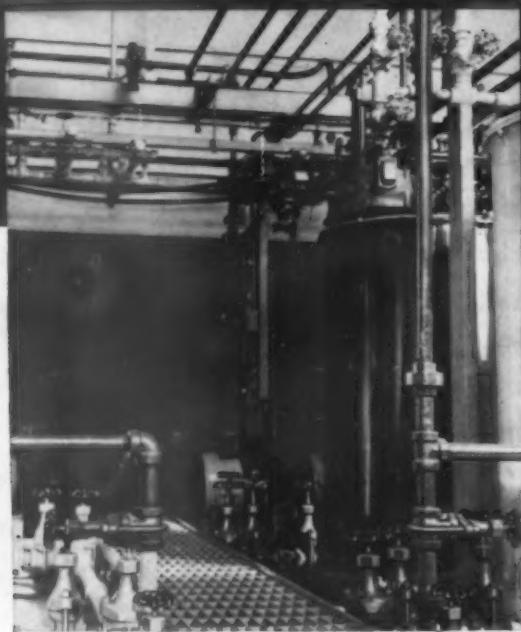




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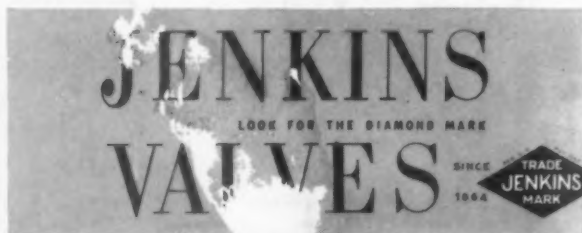


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